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# IRON AGE

A Review of the Hardware, Iron and Metal Trades.

Published every Thursday Morning by David Williams, Nos. 96, 98, 100 & 102 Reade St., New York.

Vol. LIII: No. 24. New York, Thursday, June 14, 1894. \$4.50 a Year, including Postage. Single Copies, Ten Cents.

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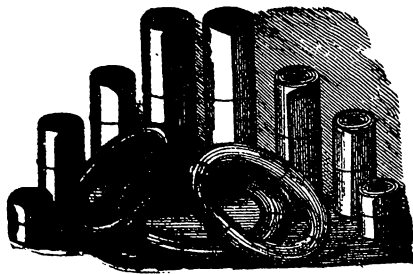
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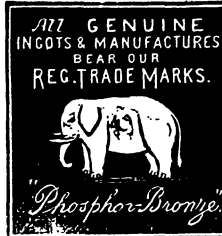
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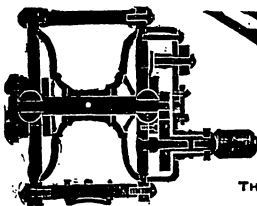
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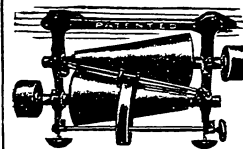
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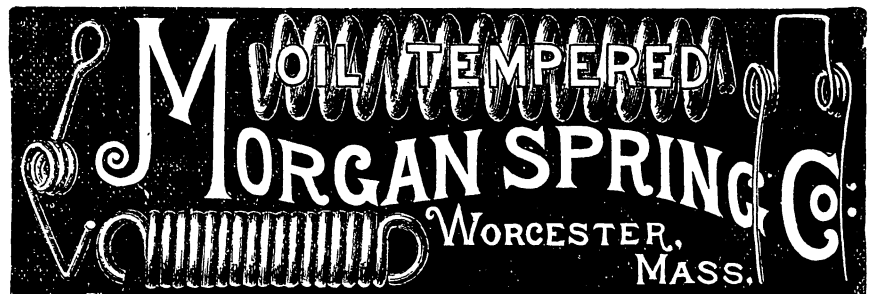
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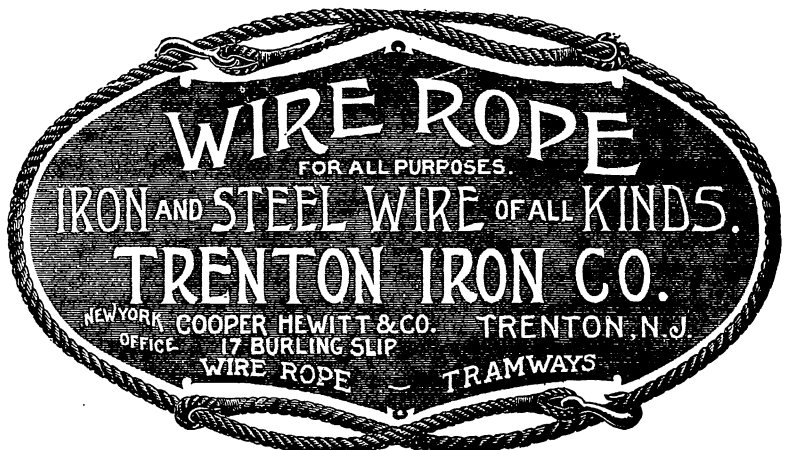
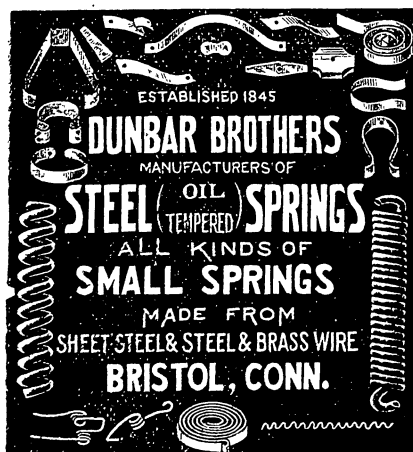
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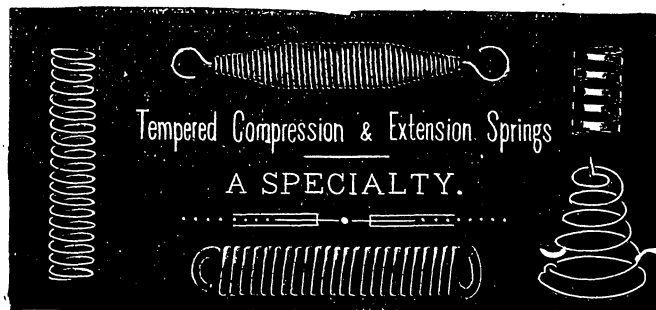
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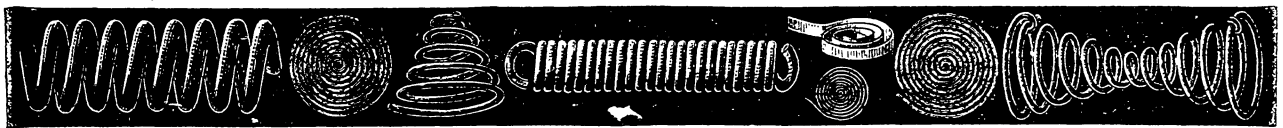
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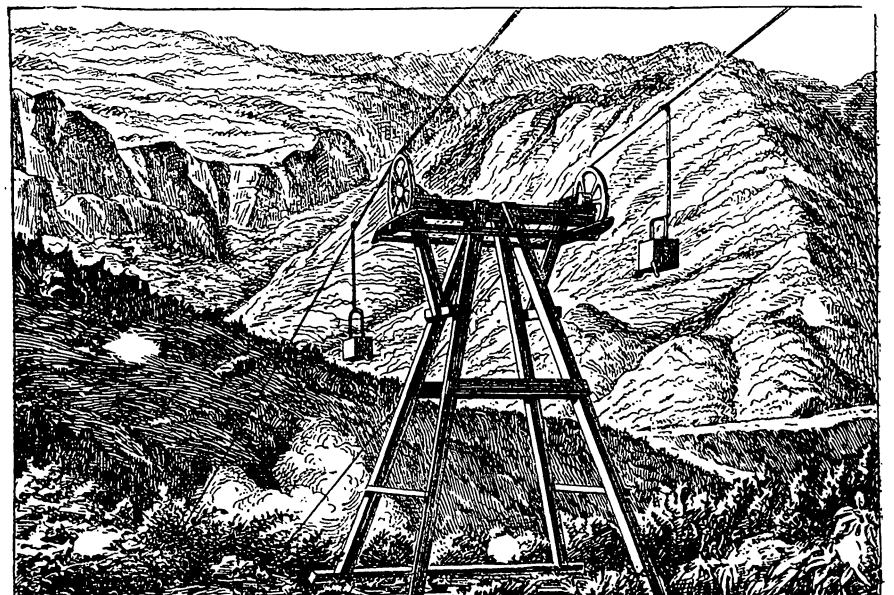
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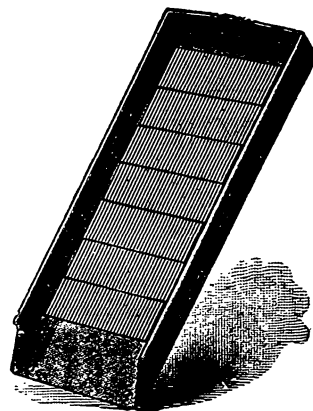
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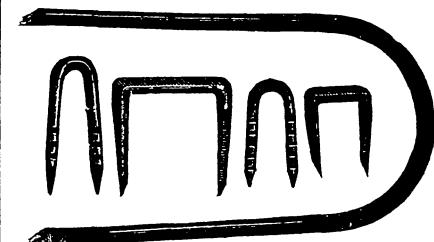
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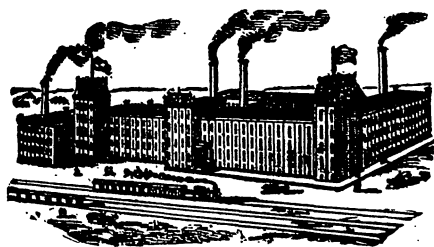
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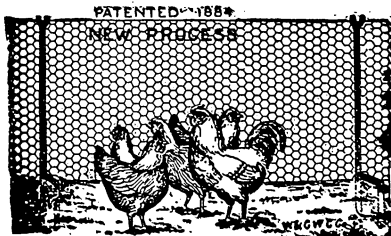
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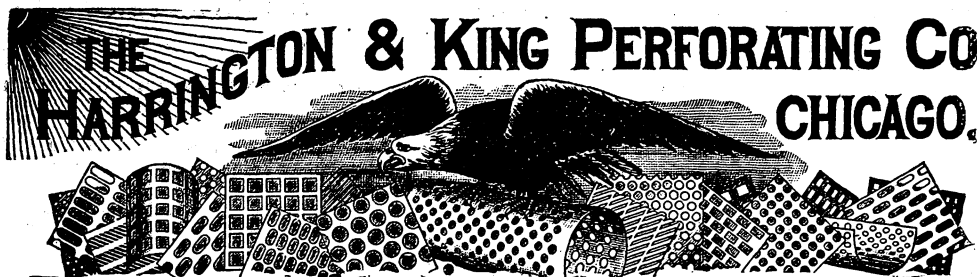
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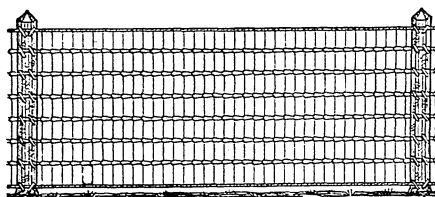
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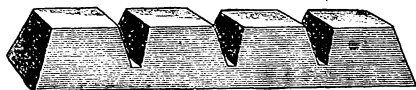
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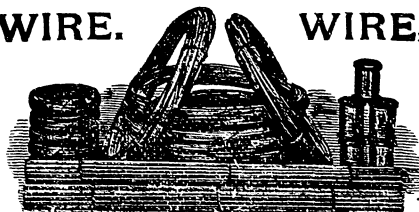
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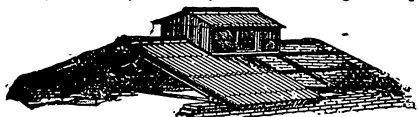
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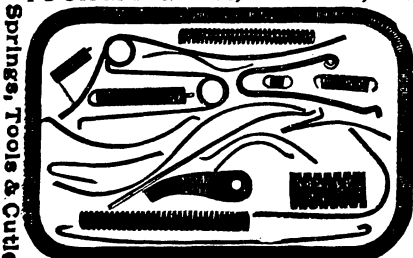
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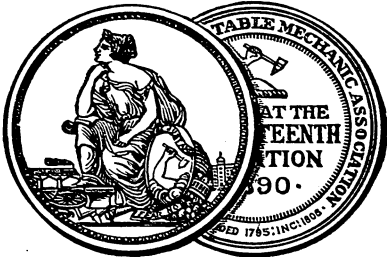
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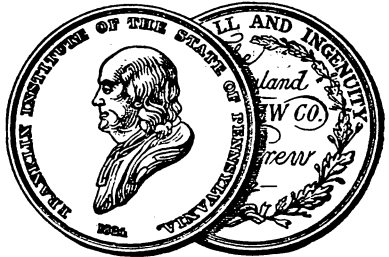
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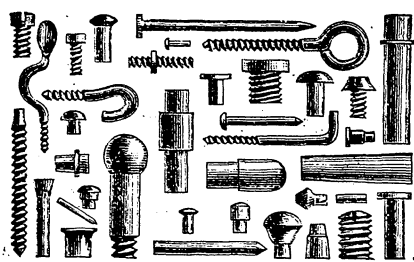
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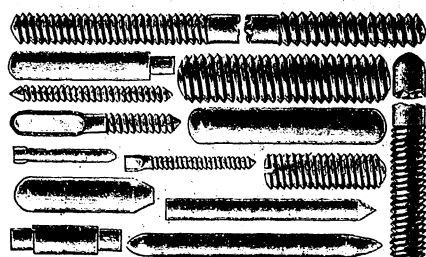
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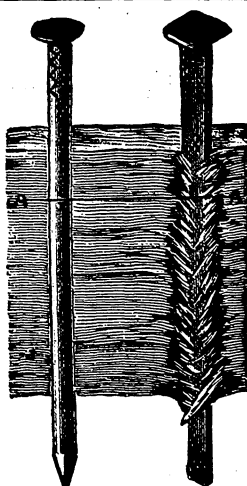
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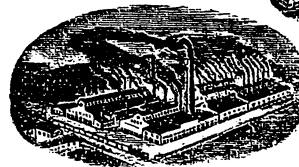
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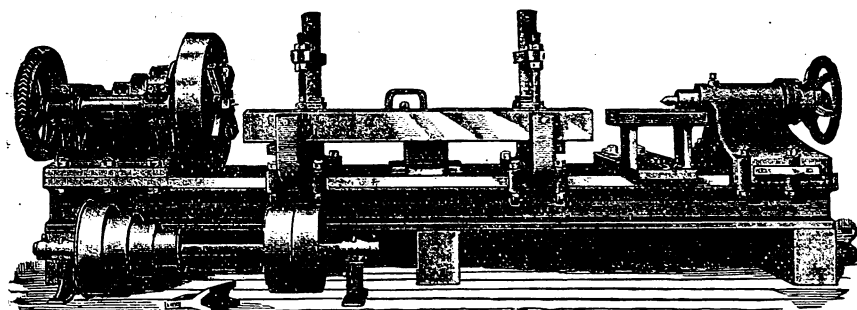
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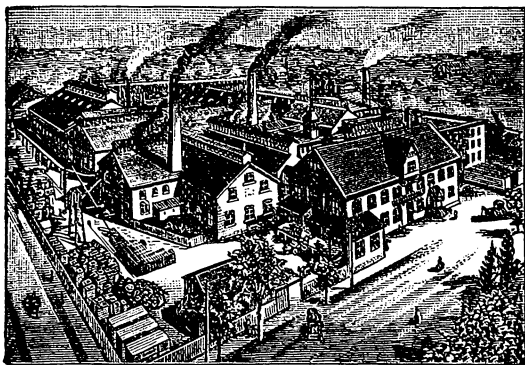
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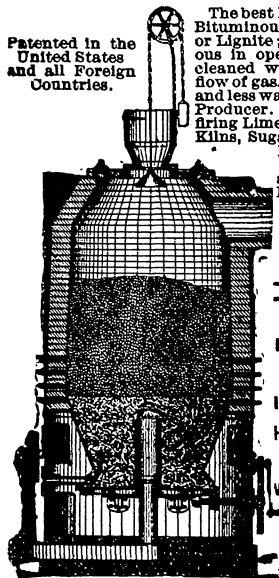
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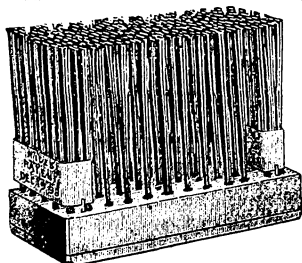
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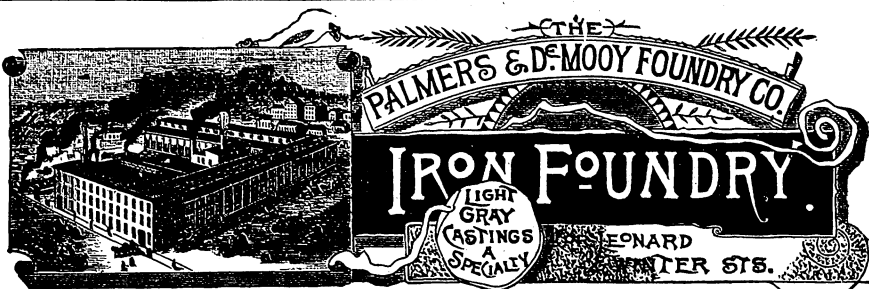
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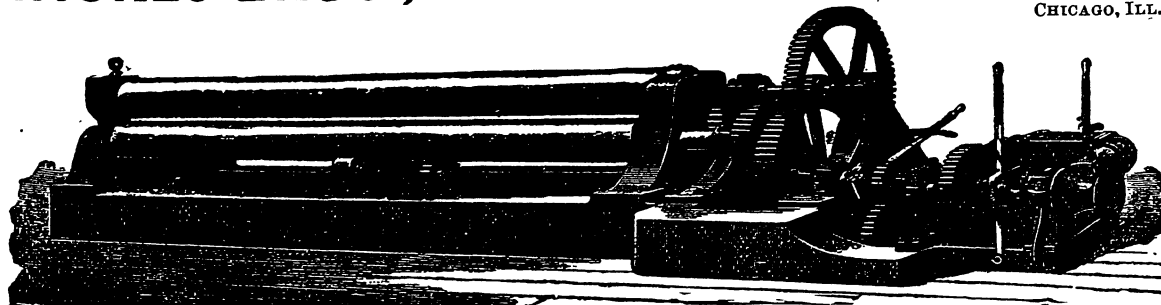
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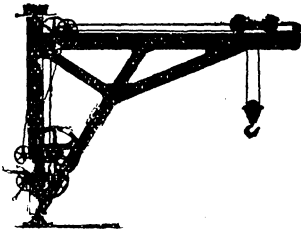
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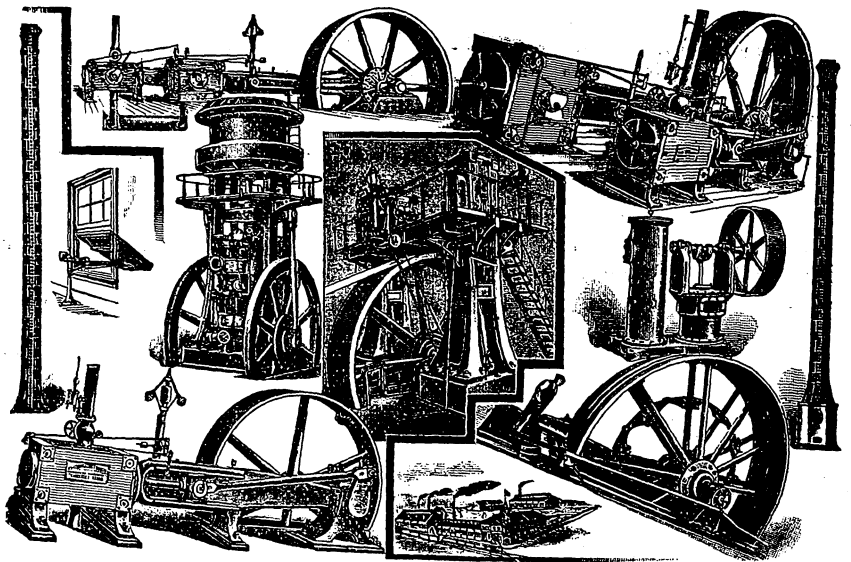
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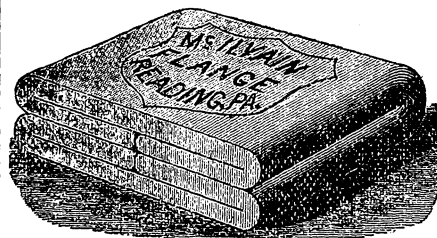
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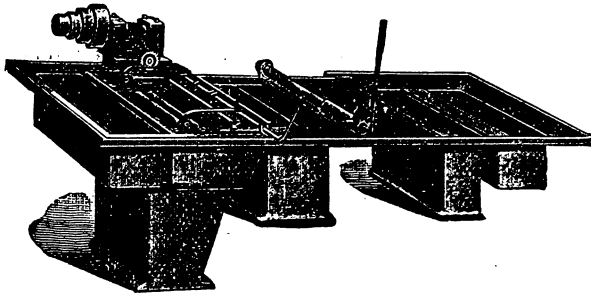
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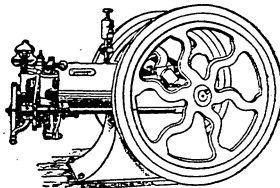
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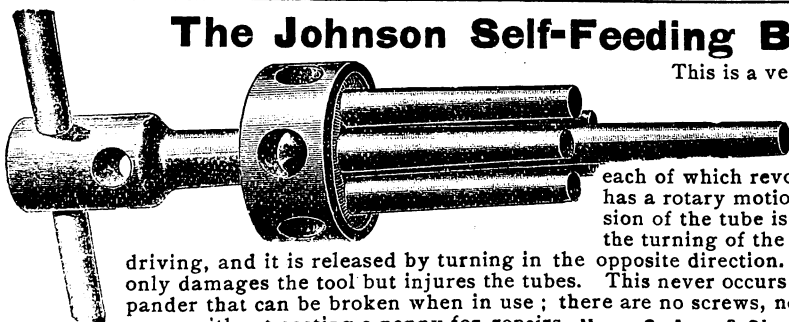
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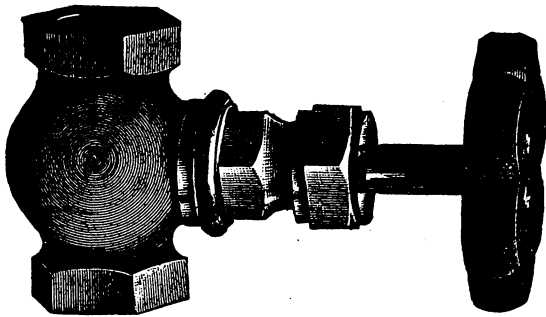
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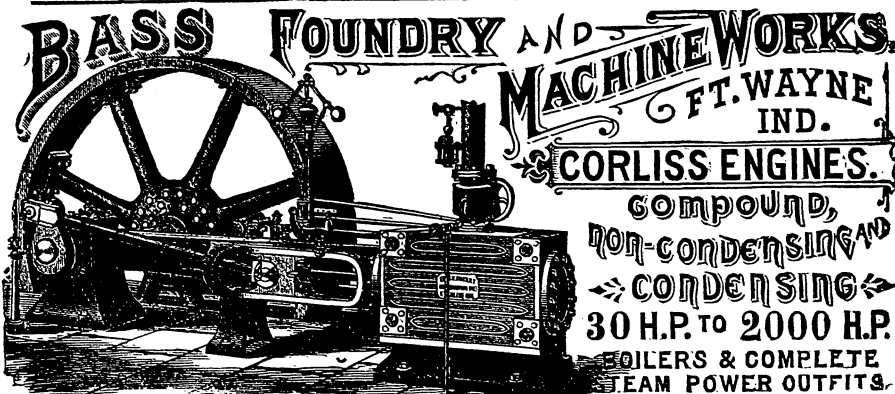
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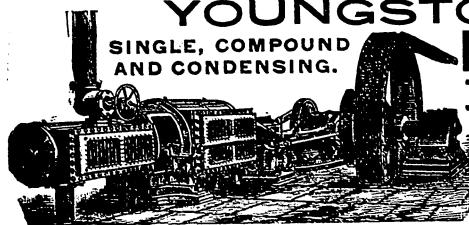
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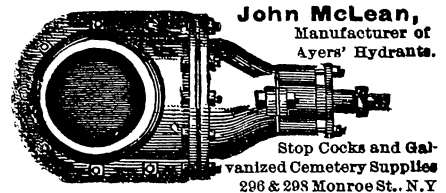
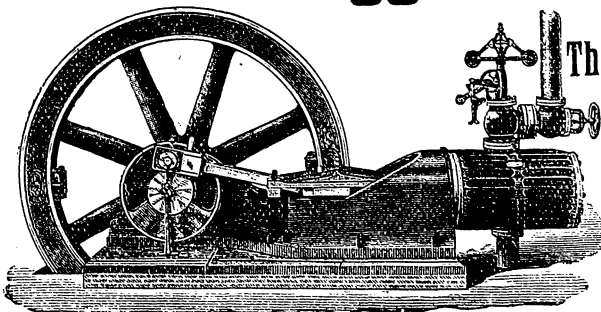
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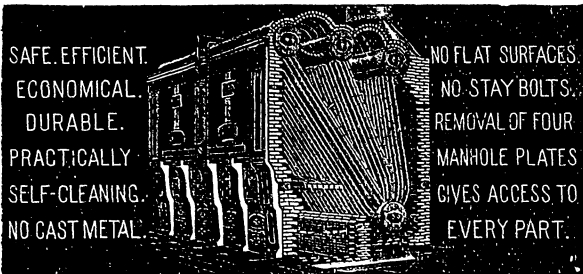


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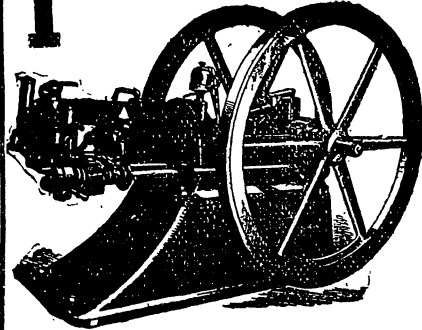


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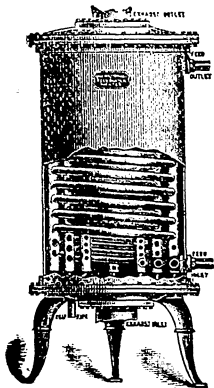
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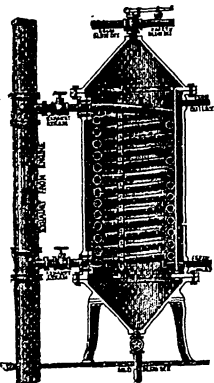


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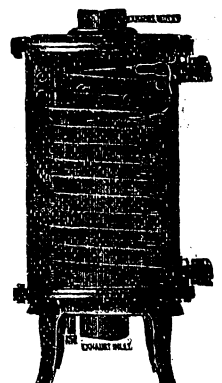
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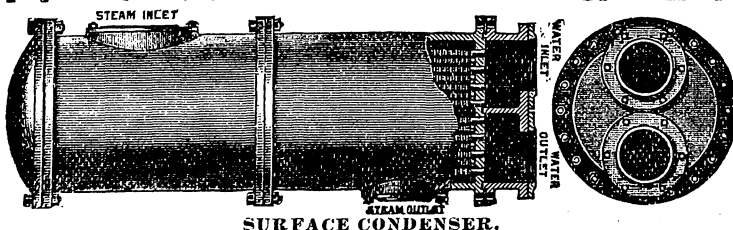
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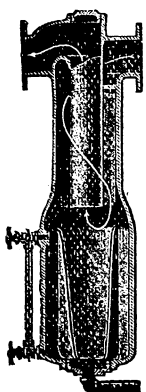
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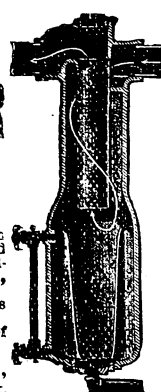


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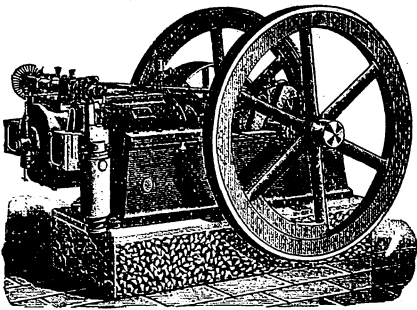
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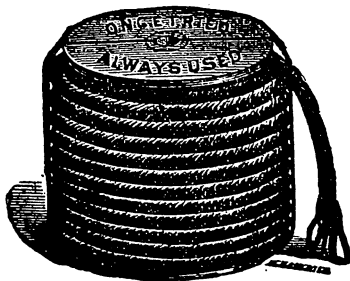
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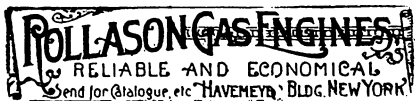
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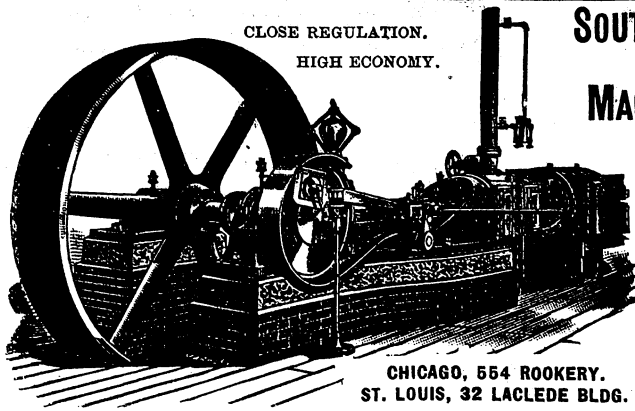
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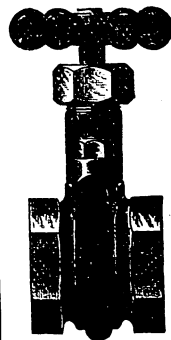
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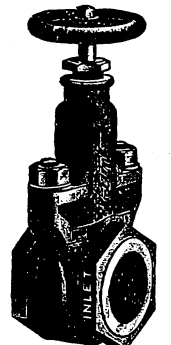
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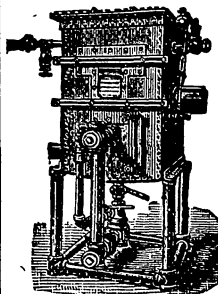
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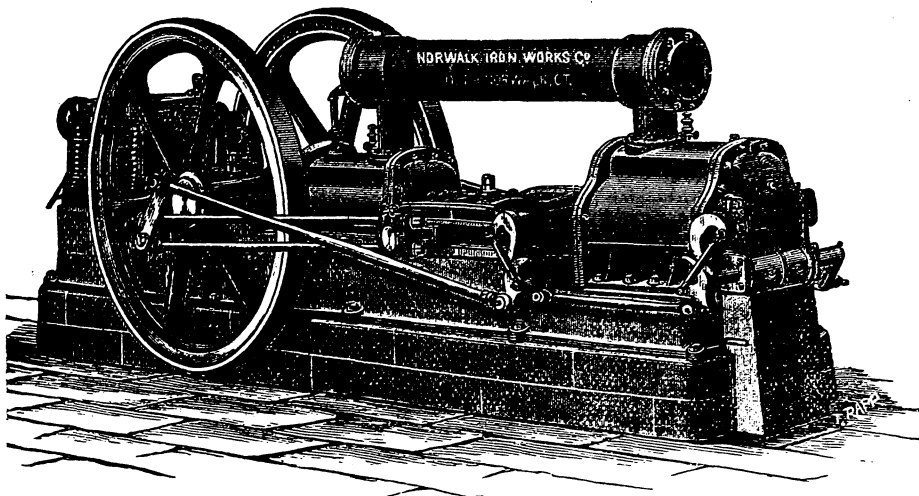
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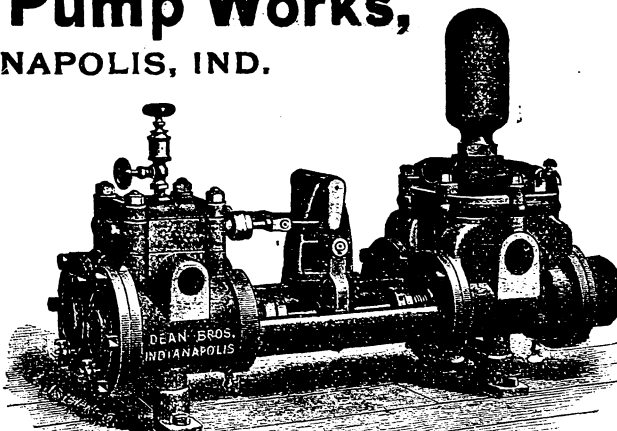
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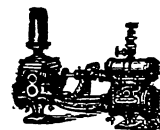
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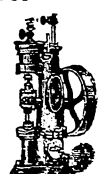
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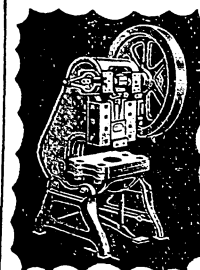
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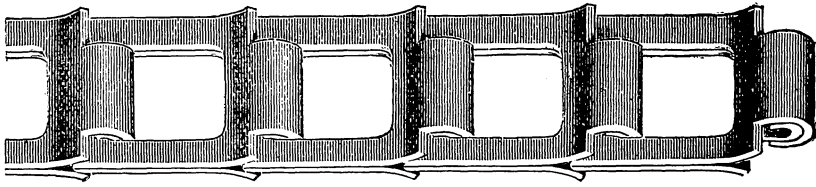
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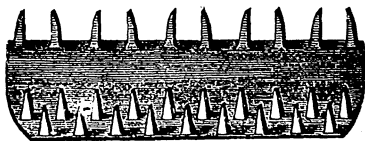


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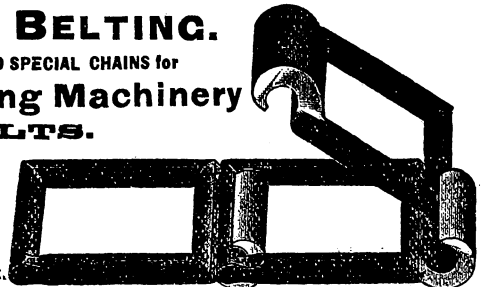
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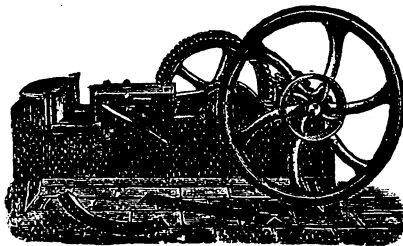
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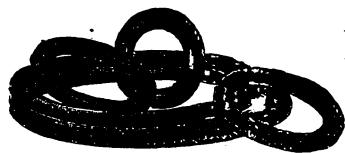
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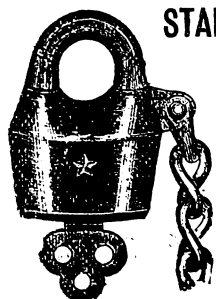


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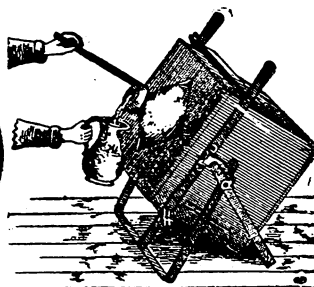
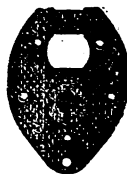
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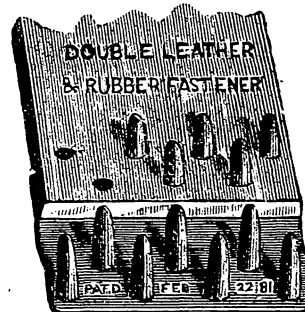
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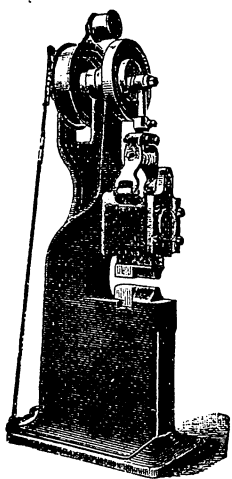
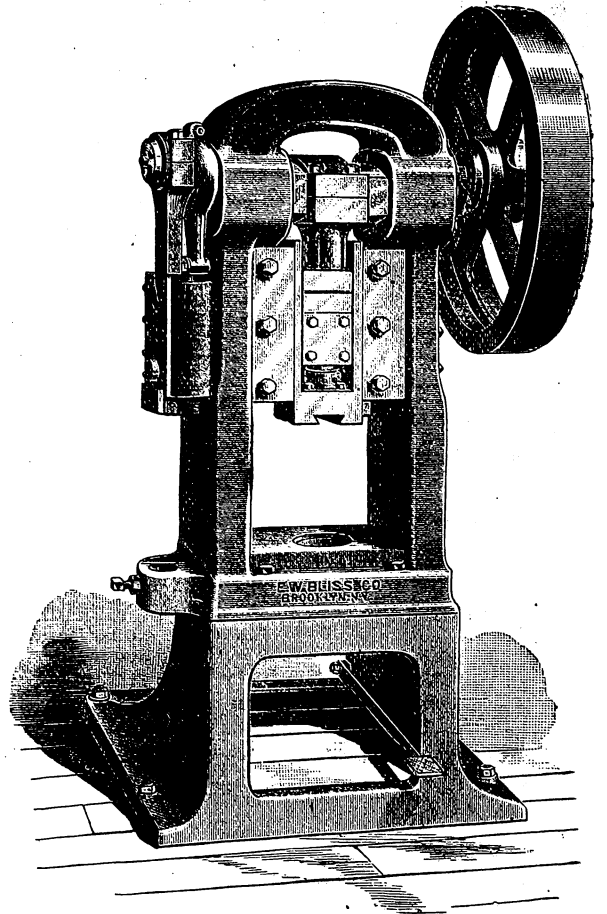
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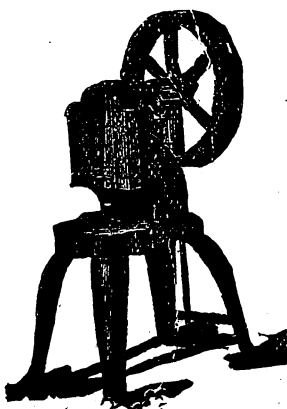
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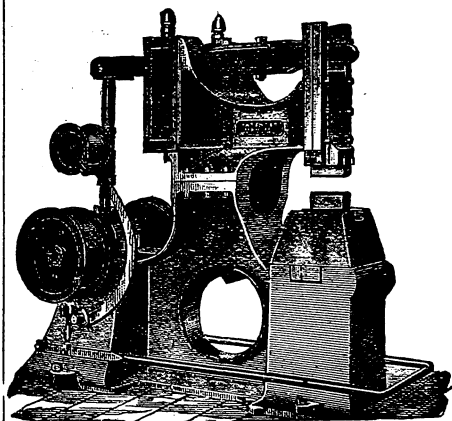
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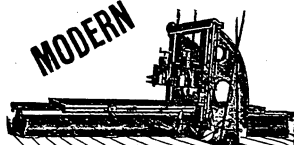
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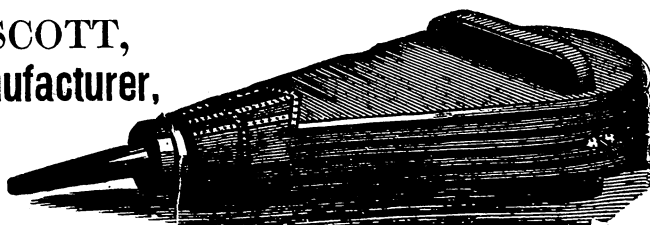
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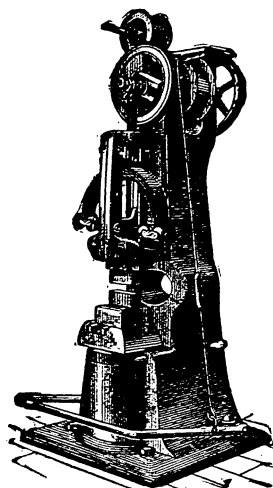
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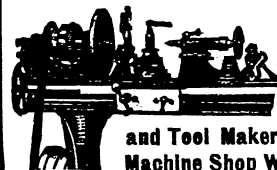
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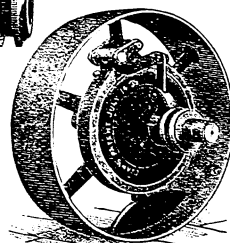
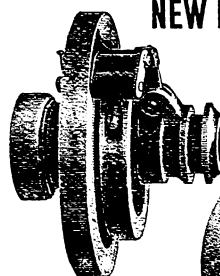
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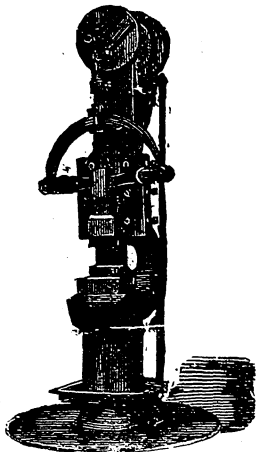


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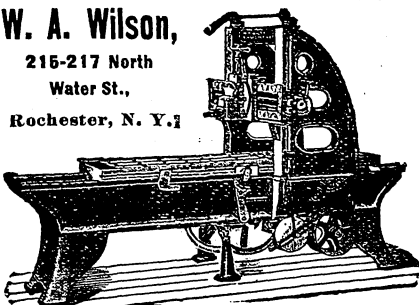
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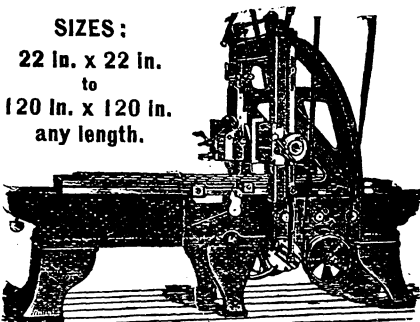


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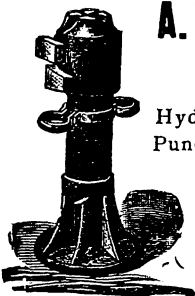
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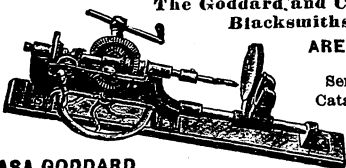
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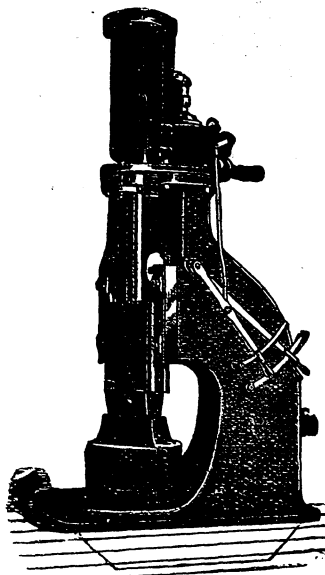
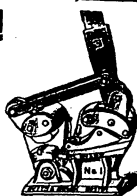
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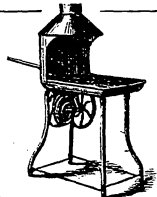
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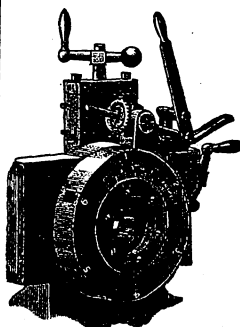
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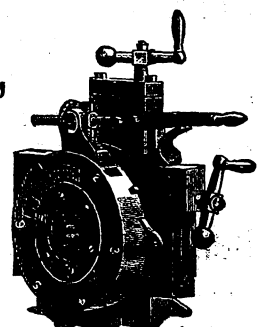
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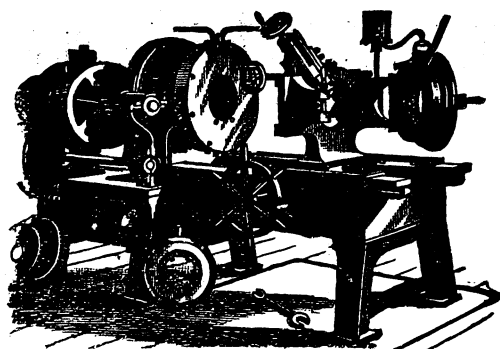
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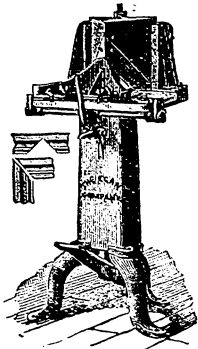
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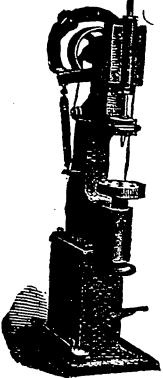
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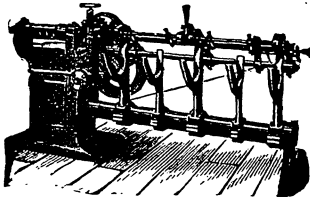
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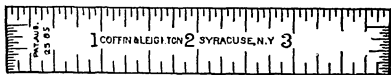
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A Pipe-Threading Die extremely easy of operation by reason of the proper clearance of its cutters;

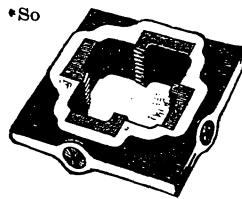
Of surpassing durability secured by the accurate and uniform temper of said Cutters;

Having Cutters that when dull may be removed in a moment, and sharpened on a grindstone or emery wheel;

Of phenomenal cheapness, arising from small first cost coupled to excellence of quality.

*If by chance you do not think these points, or the saving of money, objectionable,*

\*So



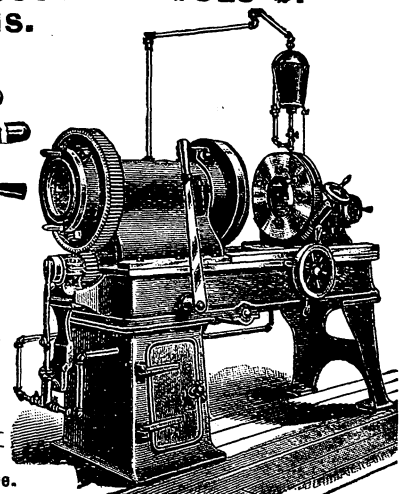
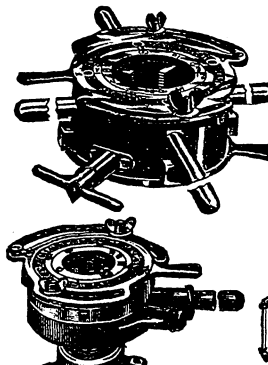
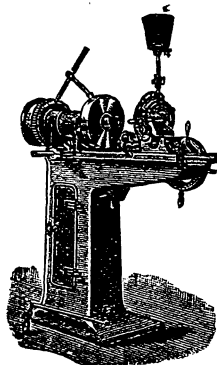
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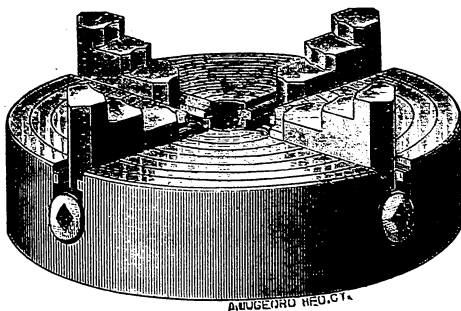
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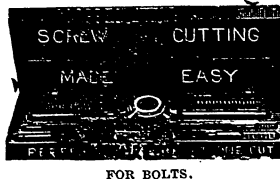


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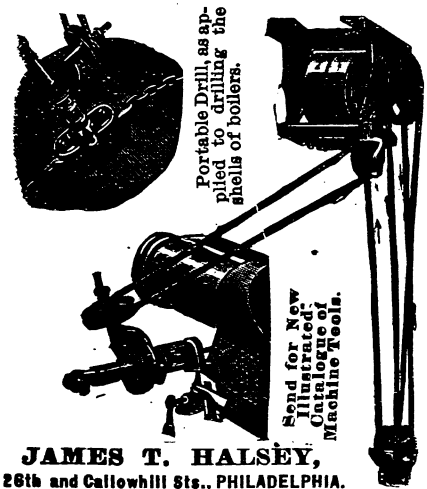


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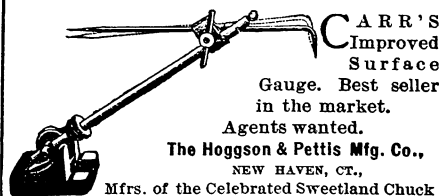
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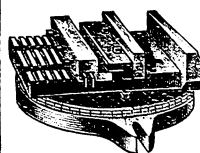
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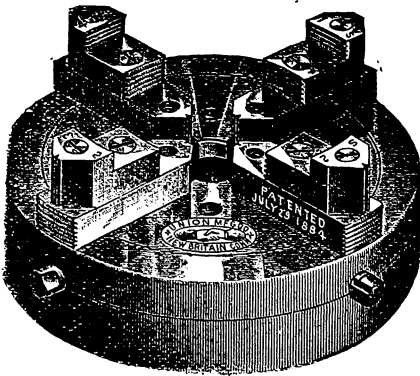


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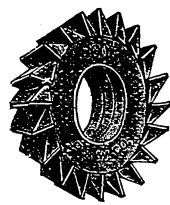
For description and price of the tools illustrated herein, also taps, dies, counterbores, holders with inserted cutters for turning, threading, forming and cutting off, ask for

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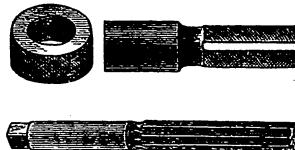
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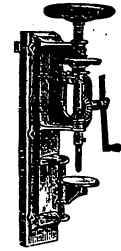
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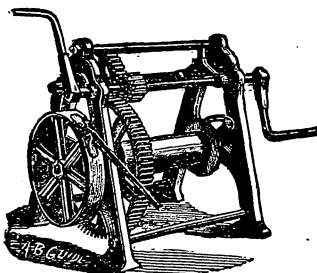
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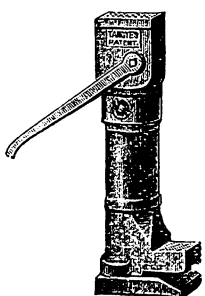
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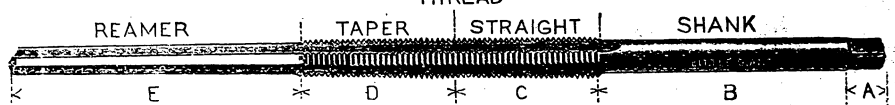
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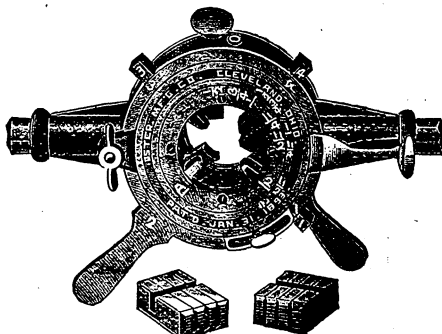


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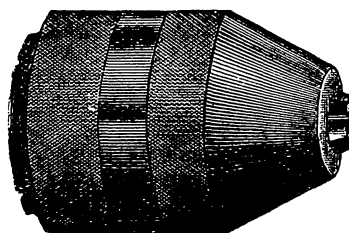
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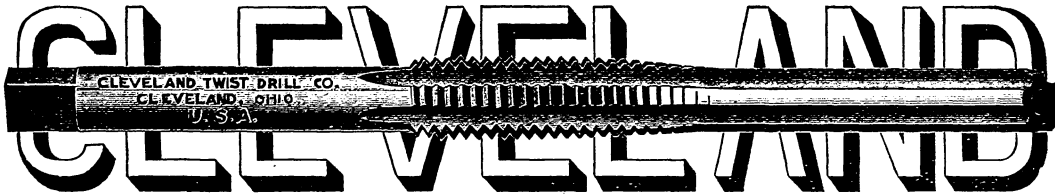
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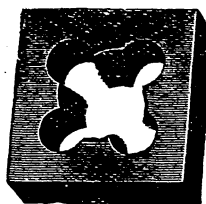
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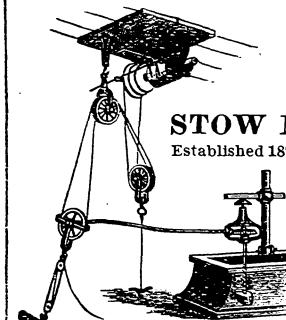
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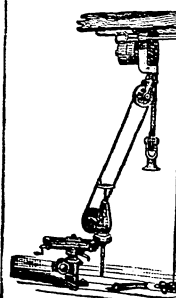
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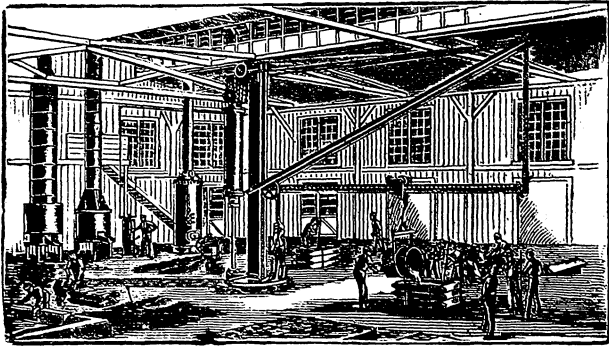
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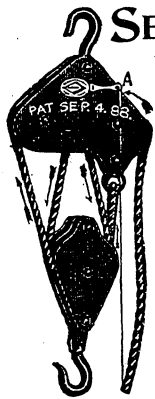
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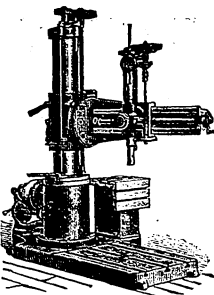
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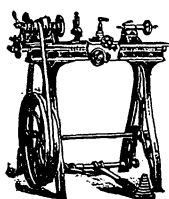
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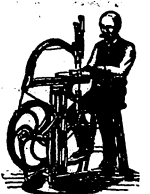
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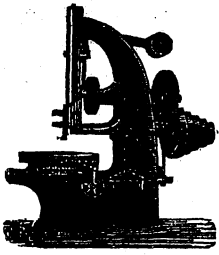


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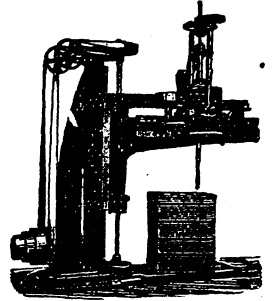


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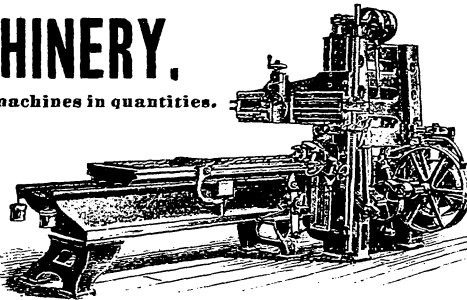
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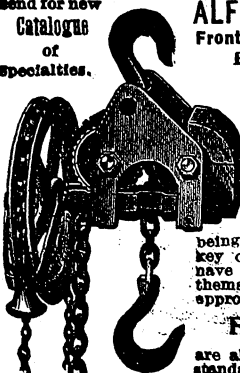
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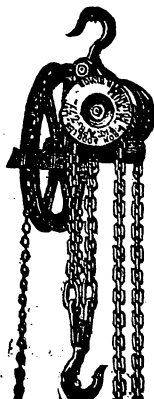
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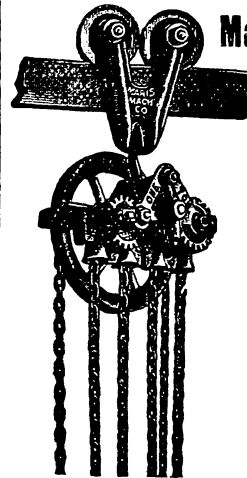
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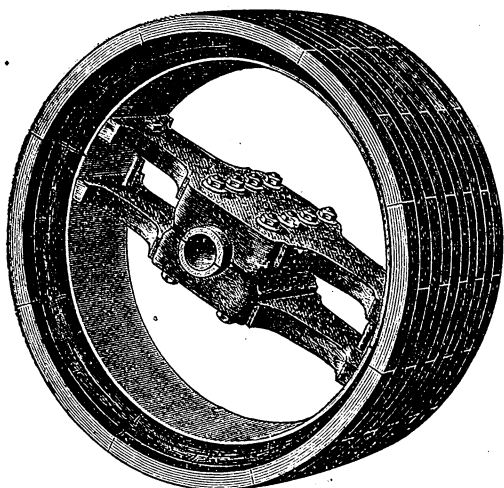
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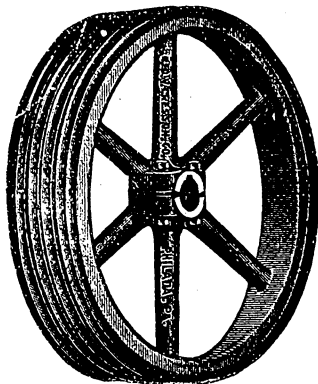
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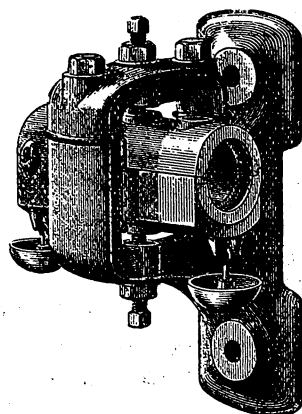
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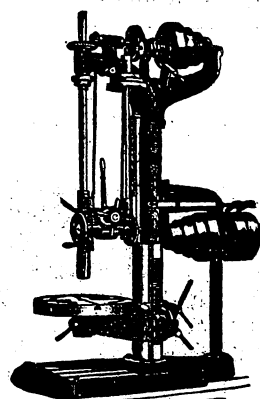
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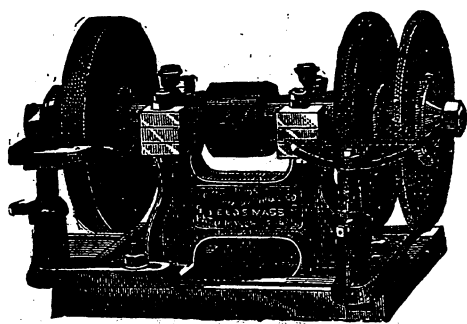
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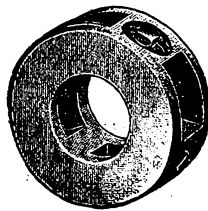
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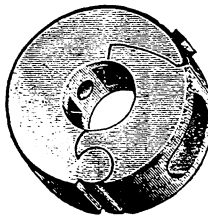
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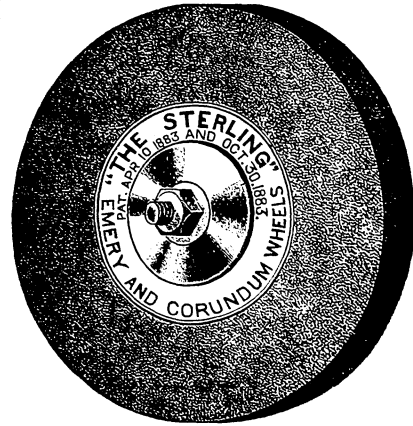
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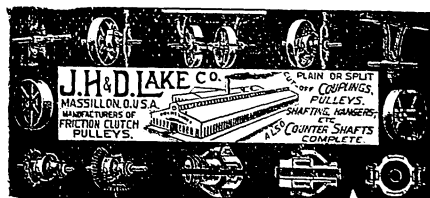
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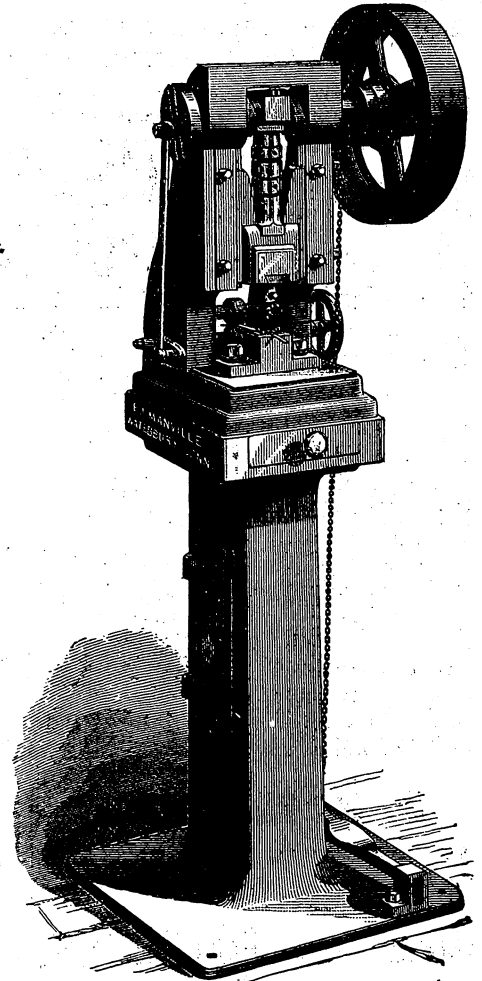
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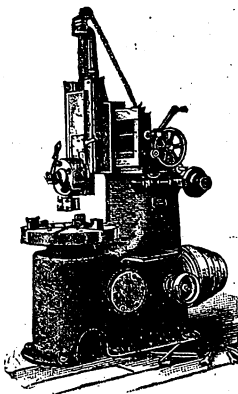
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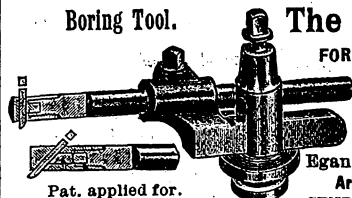
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ONE MAN CAN BAND YOUR BOXES QUICKER THAN TWO MEN CAN IN ANY OTHER WAY. HOOP IRON WIRE OR ANY OTHER FLEXIBLE MATERIAL CAN BE USED EQUALLY WELL. Send for price SOON PAYS FOR ITSELF. **J.W. GOODSELL - BURLINGTON, VT.**

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Solid through trains between Cincinnati, Toledo and Detroit. Pullman Vestibuled Trains between Cincinnati, Indianapolis and Chicago. Through car lines from Cincinnati via Indianapolis to St. Louis; also Cincinnati via Indianapolis to Decatur, Springfield, Ills., and Keokuk. These are the only lines running Pullman Vestibule and Dining Cars between the cities named. See that your ticket reads via Cincinnati, Hamilton and Dayton.

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A large handsome map of the United States mounted and suitable for office or home use, is issued by the Burlington Route. Copies will be mailed to any address (mentioning *The Iron Age*) on receipt of fifteen cents in postage by P. S. EUSTIS, Gen'l Pass. Agent, C. B. & Q. R. R., Chicago, Ill.

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**ATTENTION!** Merchants and Manufacturers.—We collect your past due accounts. Do not let them remain too long upon your books. Send for our draft book.

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 4 and 6 Warren street, New York.  
**JAS. H. GOLDEY, Treas.**

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**E. BISSELL, SON & CO.,**  
 Successors to  
**HAYDOCK & BISSELL,**  
**WHOLESALE**

**HARDWARE AUCTIONEERS,**  
**19 Murray St. and 15 Park Place, N. Y.**  
 Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

The Iron Age Standard Hardware Lists For Use in Price Books. Compiled by R. R. WILLIAMS, Hardware Editor of *The Iron Age*. These lists are supplied in pamphlet form and are intended to be cut out and inserted in *The Iron Age* Hardware Price Books. For this purpose they are printed on thin and tough paper of the best quality, and prepared with a special view to compactness and convenience of reference. Some of the lists are printed in more than one arrangement, permitting a choice of the best adapted.

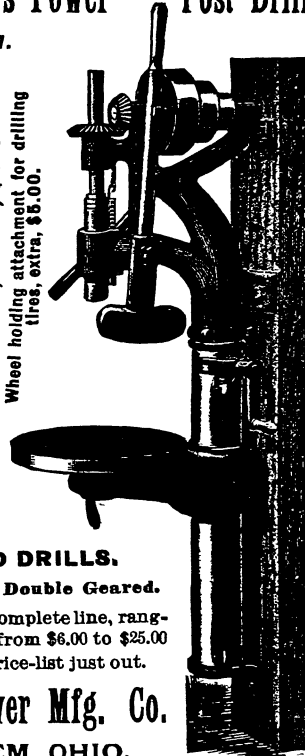
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FIG. 727.

Has OUT GRAB, and is a thoroughly first-class tool in all respects. Dia. Column, 4 1/2 in.; Dia. Spindle, 1 3/8 in.; and bored No. 2 Morse Taper; Vertical Travel, 6 in.; Drills to centre 10 in. circle.  
**Weight, 325 lbs.; Price, \$60.00.**  
 Wheel holding attachment for drilling tires, extra, \$5.00.



### HAND DRILLS.

Single and Double Geared.

Large and complete line, ranging in price from \$6.00 to \$25.00. List. New price-list just out.

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## ADOLPH BUTZE,

Manufacturers' Agent.  
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AGENT FOR—  
 LATROBE STEEL WORKS, Locomotive and Car Wheel Tires. UNITED RUBBER CO., Hose, Packing, &c. GEO. GRIFFITHS CO., Shovels, Scoops, &c.  
 Corrugated Galvanized and Sheet Iron, Plate, Tank and Bar Iron, Waste—White, Colored and Wool.  
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NOW is the time to INVEST in  
**SOUTHERN TIMBER- MINERAL LANDS,**

Before prices advance. All kinds of mines for sale.

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Terms Easy. CINCINNATI, O. Titles Perfect.

If advertising absorbs any of your "principal," it presumably exists to some extent your "interest" also. Do you feel quite certain that the betterment of your various advertising ventures in their matter, manner (or person) is not possible? State extended advertisement, which without a prolonged interest in advertising address Box 281, for "Circular No. 9." "Circular No. 9" is a "bad" pondence with a fore, should venture place of one. This "Circular," No. 9, costing you nothing, is at least worth so much.

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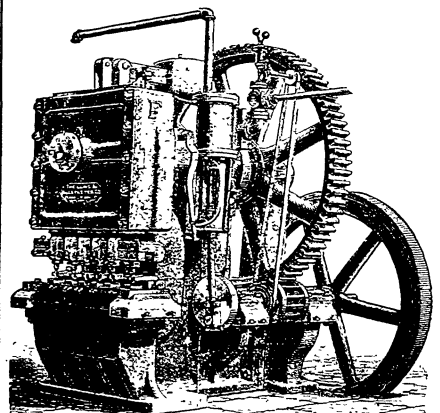
**GRIFFITH,**

**AXTELL &**

**CADY CO.**

Holyoke, Mass.

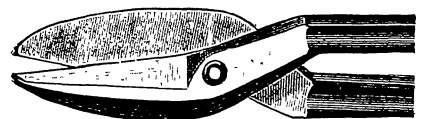
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**THE LONG & ALLSTATTER CO.,**  
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Special Offer for 60 Days.

## Tinners' Tools AND MACHINES

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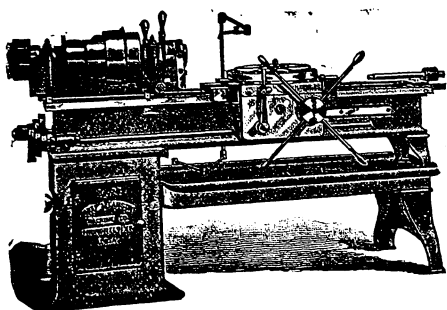
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**Peerless 72 HOUR Coke.**

Analyses show "Peerless" contains 4 per cent. more fixed carbon, 4 per cent. less ash, and 0.21 per cent. less sulphur than either Frick or Connellsville.

**COKE RECEIVED DAILY.**

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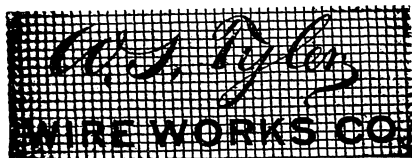
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If not send for

## RAPID LATHE WORK.

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Improved Revolving Mining Screens,

For Coal, Ores, Phosphates, Etc.

Also Tipple Screens and Yard Screens. Extra Heavy Double Crimped Mining Cloths, of every description.

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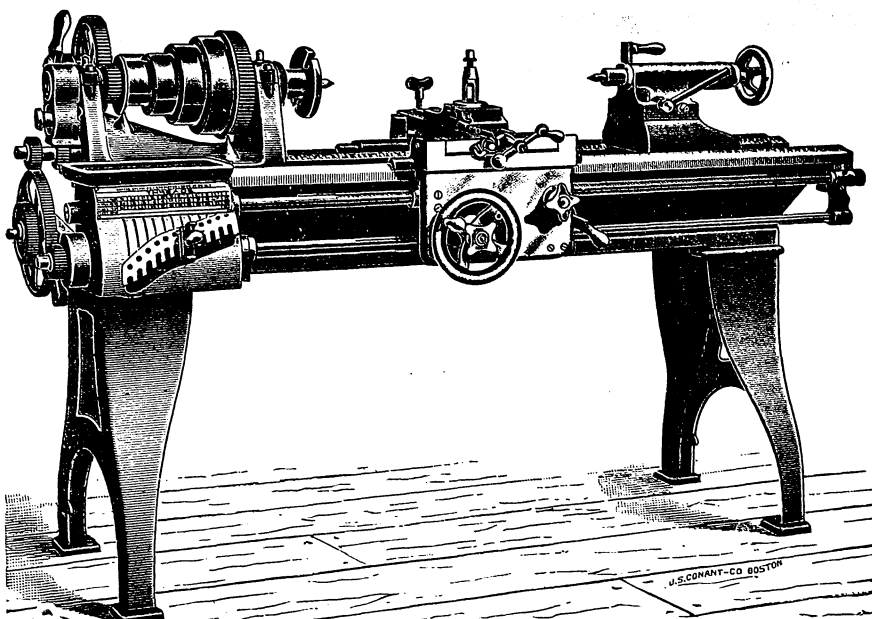
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The Pittsburgh Reduction Co.,

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Offer Aluminum guaranteed equal in purity to the best in the market, at lowest rates obtainable.

ALUMINUM SHEET, WIRE, AND CASTINGS.



The Henley Machine Co., Torrington, Conn.

A NEW FEATURE IN SCREW CUTTING ENGINE LATHES. THE HENDEY-NORTON LATHE.

This lathe cuts 12 different screws, from 6 to 20, without changing the gears, and feed changes from 36 to 120 cuts per inch without change. This cut shows a 14-inch x 6-foot Lathe. It has hollow spindle, 1-inch. Has compound or elevating rest, as preferred, or the double carriage rise and fall rest. Also taper attachment if desired. The carriage reverses for screw cutting without the use of the countershaft, from the lever at the end of carriage, allowing the spindle to run in one continuous direction. In stock for immediate delivery, 14-inch, 16-inch and 18-inch 20-inch and 30-inch in the works. Send for descriptive catalogue.

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EUGENE SOLLER, Basel, Switzerland, }

The Henley Machine Co., - Torrington, Conn.

## A TREATISE ON TOOTHED GEARING.

Containing complete instructions for Designing, Drawing, and Constructing Spur Wheels, Bevel Wheels, Lantern Gear, Screw Gear, Worms, &c. and the proper formation of Tooth Profiles. For the use of Machinists, Pattern Makers, Draughtsmen, Designers, Scientific Schools, &c. With many plates. By J. Howard Cromwell. 12mo, cloth. \$1.50.

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### THE HORIZONTAL BORING MACHINE

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FIRSTS.

15  
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THIRDS.

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FOURTHS.

THESE are the simple figures of the Memorial Day winnings on the Stearns Bicycle in the racing events throughout the country.

E. C. STEARNS & CO.,  
Syracuse, N. Y.



## ECLIPSE BICYCLES.

MODEL A - - \$125.  
LADIES' - - 125.  
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LADIES' F - - 100.  
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Each Model the best value at its price. Six Thousand Riders of our 1894 machines can testify to their excellent qualities. Liberal prices to the Hardware trade.

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ESTIMATES FURNISHED FOR ALL CLASSES OF WORK.

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## WHITE MOUNTAIN FREEZERS.

THE  
BEST  
FREEZER.

Heavy Waterproof Tubs. Cans of Charcoal Tinplate. Malleable Iron Dashers. All inside parts tin-plated. Gearing completely covered.

THE  
BEST  
SELLER.

The White Mountain Freezer Co., Nashua, N. H.



The true test of a Freezer is how well it performs its work; in this respect the unsolicited testimony of thousands pronounce the "Packer Freezers" unexcelled.

**GOOD LUCK, STANDARD,  
AND CONFECTIONERS' MACHINE FREEZERS.**

The "Good Luck" is the latest and best low price Freezer on the market. Inside Castings Tinned. Malleable Iron Fittings. Automatic Scraper. White Cedar Pails with Galvanized Steel Hoops. Pine Pails, or Wire Rings with bottom of pail unprotected are not used.

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We  
Have  
Bought  
From  
The  
Shepard  
Hardware  
Company of  
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ALL THEIR PATENTS, PATTERNS AND TRADE-  
MARKS, &C., OF THE

## "ORIGINAL" CLARK

Blind, Shutter and Gate Hinges,  
Latches and Frame Pulleys,

And will in future manufacture same and fill all orders  
direct from our factory.

WRIGHTSVILLE HARDWARE CO.,

WRIGHTSVILLE, PA.



The rapidity and ease with which the scales can be removed with this tool makes it a very desirable device for the purpose.

It is made of heavy sheet steel and steel shank, and finely finished by being C-plated with a non-corrosive metal. Will send sample by mail for 15 cents.

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## Hardware Dealers Can Profitably SELL BICYCLES.

There is a large trade in Bicycles in all parts of the country and much of that trade naturally belongs to dealers in hardware. Good bicycles meet with a ready sale and pay a fair percentage of profit.

## COLUMBIAS

Are the representative high grade machines in America. A Columbia is the easiest machine to sell to the best trade because it is unquestionably the standard wheel of the world.

We want enterprising agents of good standing and solicit correspondence.

Pope Mfg. Co.,

221 Columbus Ave.,  
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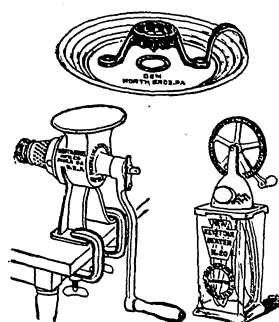
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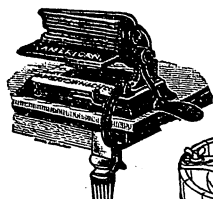
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Diplomas awarded. To begin students need only know how to read and write. Send for FREE Circular of Information stating the subject you think of studying to THE CORRESPONDENCE SCHOOL OF MECHANICS AND INDUSTRIAL SCIENCES, Scranton, Pa.

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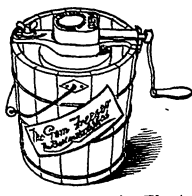


New Perfection Cutter.



American Fluter.

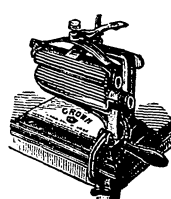
PRE-EMINENTLY  
THE BEST IN  
DESIGN,  
WORKMANSHIP,  
PRACTICAL USE.



WHITE CEDAR  
PAILS WITH

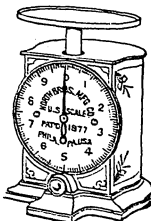
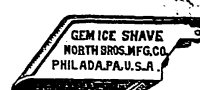


Electric-Welded Wire Hoops.  
Guaranteed not to fall off.



Crown Fluter.

SOLD BY  
THE BEST  
JOBBER AND  
RETAIL HOUSES  
IN THE U. S.



U. S. Dial Scale.

For Particulars, Prices and Discounts, Write **NORTH BROS. MFG. CO., Philadelphia, Pa.**

NEW YORK AGENTS,  
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# CLARK'S BEST QUALITY SCREW DRIVERS.



Four Drivers and one Handle; all interchangeable; are hardened and tempered all over; made of best stock, and finished first-class.

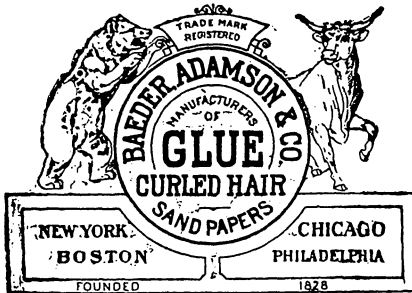
FOR SALE BY ALL HARDWARE DEALERS.

MANUFACTURED BY

**R. H. BROWN & CO.**

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*You take no risk on the quality.  
We make only the best!*



**Sand Papers**

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Flint Paper  
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Emery Cloth

**HAIR FELTING** for covering Boilers, Steam and Water Pipe, and lining Refrigerators.

**BAEDER, ADAMSON & CO.**

730 MARKET STREET, PHILADELPHIA.  
67 BECKMAN STREET, NEW YORK.  
143 MILK STREET, BOSTON.  
182 LAKE STREET, CHICAGO.

# ROLLER JACK SCREW.



We have experimented much with ball bearing Jacks, and found them very satisfactory when not heavily loaded. Now, instead of balls we put in rollers, as seen in cut. These rollers will stand any load that the Jack will carry, and are not liable to get out of order. We have thoroughly tested these Roller Jacks with a spring balance and find a saving of forty per cent. of power needed to lift a given weight.

The price is about ten per cent. more for Roller Jacks, and the gain is 40 per cent. This ought to insure their sale as fast as the facts become known.

# MILLERS FALLS CO.,

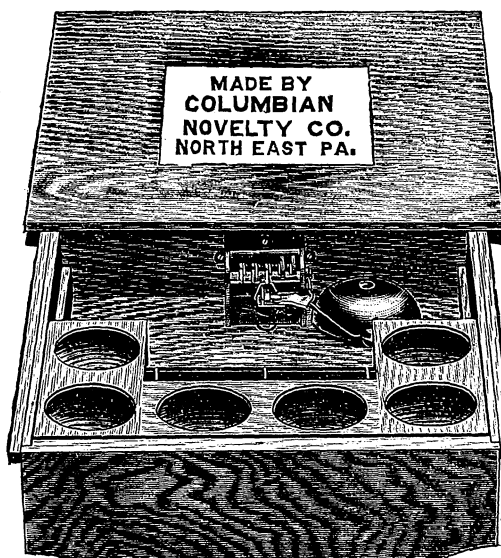
93 READE STREET, - - - NEW YORK.

Palmer's Common Sense Frame Pulley.



MANUFACTURED BY

PALMER HARDWARE MFG. CO., Troy, N.Y.



"GEM"

Alarm Lock

Cash Till.

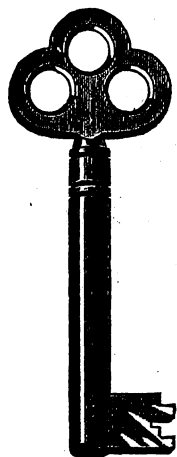
This Cash Till is beyond question the best Till for the purpose on the market, combining as it does a greater number of changes, simplicity and convenience, and above all, superior workmanship and material in its construction.

Packed one-half dozen in crate.

Prices quoted on application.

# CABINET LOCKS

OF EVERY KIND.



DRAWER LOCKS,  
CUPBOARD LOCKS,  
WARDROBE LOCKS,  
CHEST LOCKS,  
DESK LOCKS.



A complete line of more than 1000 list numbers exclusive of our old  
and complete line of

**YALE CABINET LOCKS.**

**THE YALE & TOWNE M'F'G CO.,**

STAMFORD, CONNECTICUT.

New York. Chicago. Philadelphia. Boston. Pittsburg. San Francisco.

The only question is

## Is it Le Page's?

If it is you have made a sale. **HUNDREDS of THOUSANDS of PLEASSED and SATISFIED CUSTOMERS** testify to the merits of

**LE PAGE'S LIQUID GLUE.**

If you sell it you do not have to **WASTE ANY TIME** in answering questions as to its quality.

The people **KNOW** that **LE PAGE'S GLUE** is the **BEST**. They have used it for years and have proved our claims to be true.

**It is the only Glue made WITHOUT ACIDS.**

A dealer who regards his time as worth anything will not risk losing his **CUSTOMERS' CONFIDENCE** by trying to sell something which is **CLAIMED** to be "just as strong" and "just as good as LePage's."

Don't let your customers go to another store for what they want, but **SELL THEM WHAT THEY ASK FOR.**

We can furnish original and attractive advertising matter for "**LE PAGE'S GLUE**" upon request.

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**RUSSIA CEMENT CO,** Gloucester, Mass.

NEW YORK OFFICE, 95 Reade and 113 Chambers Streets.

PACIFIC COAST OFFICE, 23 Davis St., San Francisco, Cal.

## IT COSTS ONE CENT

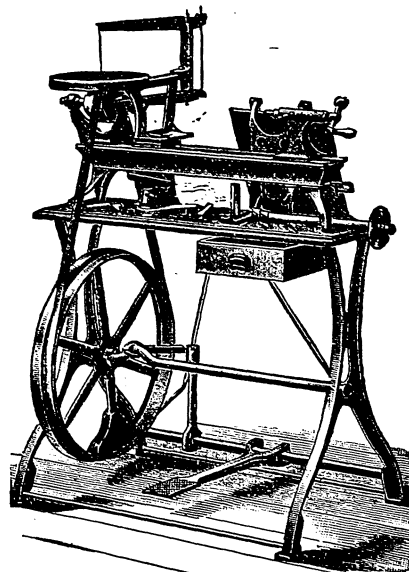
To send a postal card asking for full particulars.

THE IMPROVED

## BABBITT COMBINATION FOOT LATHE,

WITH HOLLOW SPINDLE,

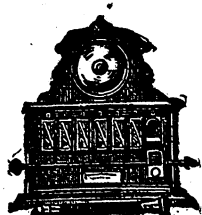
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The Jig Saw Attachment will saw hard wood  $1\frac{1}{4}$  inches in thickness, and swings 15 inches between the blade and standard. The Circular Saw Attachment has iron table; planed true; perfectly adjustable; grooved at right angles (making guide and slide move true with the saw). Write for a descriptive circular giving all particulars and price of lathe and attachments.

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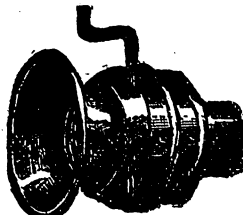
**W. R. OSTRANDER & CO.,**

204 FULTON STREET, NEW YORK.

Manufacturers of

**SPEAKING TUBES, WHISTLES, ORAL, ELECTRIC MECHANICAL AND PNEUMATIC ANNUNCIATORS AND BELLS.**

Complete outfits of Speaking Tubes, Whistles, Electric, Mechanical and Pneumatic Bells. A full line always in stock. Send for new catalogue. Factory, DeKalb ave. near Knickerbocker, Brooklyn, N. Y.



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THE OLDEST AND MOST EXTENSIVE MANUFACTURERS OF

## Pumps, Hydraulic Rams, Garden Engines,

Yard Hydrants, Street Washers, Galvanized Pump Chain, Wind Mill Pumps and other Hydraulic Machines in the World.

## DOUGLAS' DIAPHRAGM PUMPS, "Loud Patent."

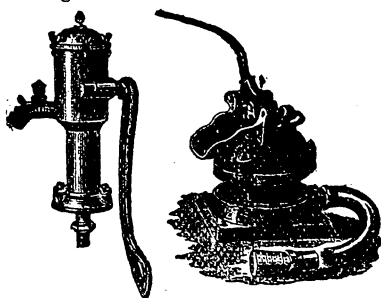
A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 209.

Fig. 381.

Fig. 145.



or wherever it is desired to raise a large quantity of water by  
hand power.

The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

CAPACITY

from 3,000 to 4,500 gallons per hour.

These pumps are simple, durable and low priced.  
Made either as shown in out for Hose or for IRON Pipe Suction underneath.

Send for Circular and Price List.



C. I. Grindstone Frame.

**THE DEMING CO.**  
FACTORY SALEM O.U.S.A.  
MANUFACTURERS OF  
HAND & POWER PUMPS, WELL SUPPLIES & C. VERTICAL STEAM PUMPING ENGINES.  
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HENION & HUBBELL  
GEN'L. WESTERN AGT.  
55 & 57 N. CLINTON ST.  
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The Leaders for 20 Years.

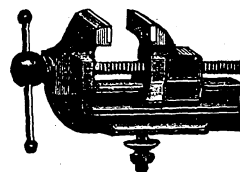
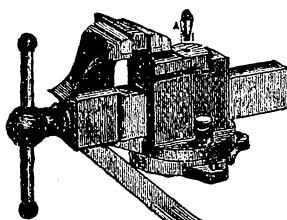
Send for Illustrated Catalogue  
of

ALL KINDS OF VISES.

PRENTISS VISE COMPANY,

MANUFACTURERS,

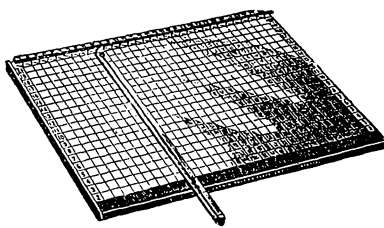
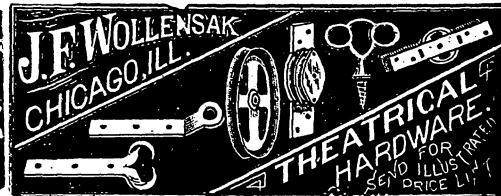
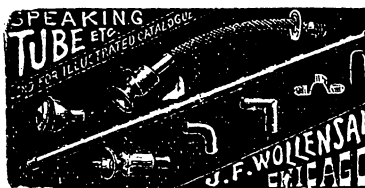
44 Barclay St., New York.



## F.E. MYERS & BRO.

**ASHLAND PUMPS**  
THE LARGEST PUMP WORKS EXCLUSIVELY IN THE UNITED STATES  
ASHLAND, O.  
+ CATALOGUES FREE +  
Ashland Pump and Hay Tool Works.

The New York Safety Dumb Waiter.  
"The Manhattan Dumb Waiter."  
The Improved Humphrey Hand Elevator.  
Made specially to be sold by Hardware Stores.  
Thousands in use. Catalogues on application.  
**THE STORM MANUFACTURING CO.**  
NEWARK, NEW JERSEY.  
Formerly of Poughkeepsie, New York.



## The PERFECTION GLASS BOARD.

The best, most complete, most durable and most convenient Glass Cutting Board in the market. It is indispensable

to any retailer of window glass, and will save its cost in a very short time. Send for descriptive circular and price.

## LUFKIN RULE CO., Saginaw, Mich.

New York Office, 2½ Murray Street.

## CLIPPER GRINDERS.



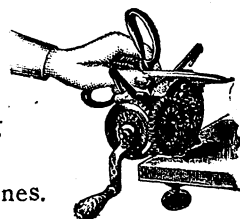
We make five sizes, Nos.

1, 2, 3, and 5.

No. 1 for joiners' use.

Nos. 2 and 3 for grinding scissors and knives.

Nos. 4 and 5 power machines.

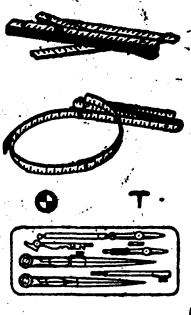


SEND FOR SPECIAL CIRCULAR TO

THE A. J. TRACY CO., Lim.,

18 Cliff St., New York, N. Y.





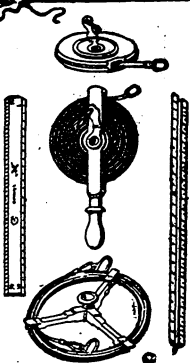
## KEUFFEL & ESSER CO.

NEW YORK.  
BRANCH: CHICAGO.  
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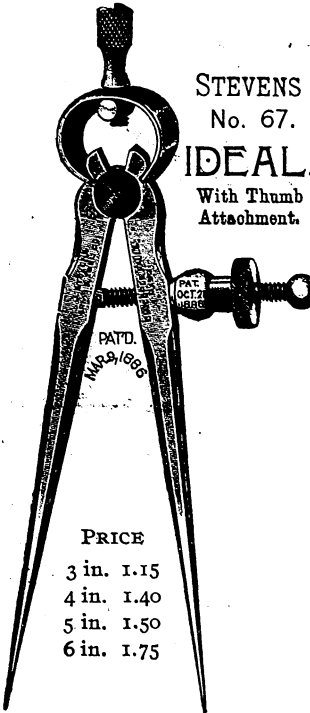
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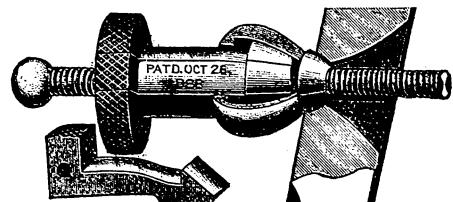


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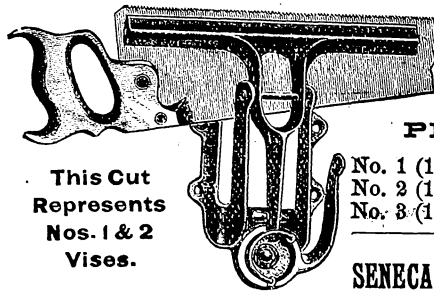
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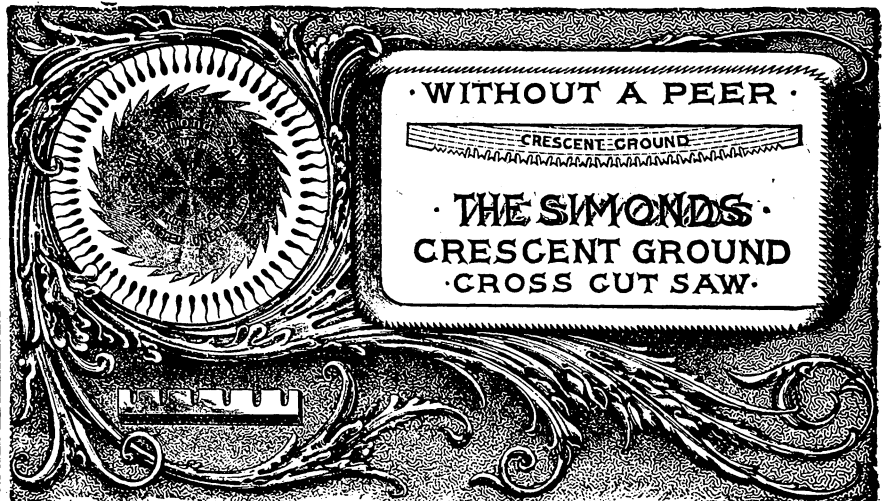
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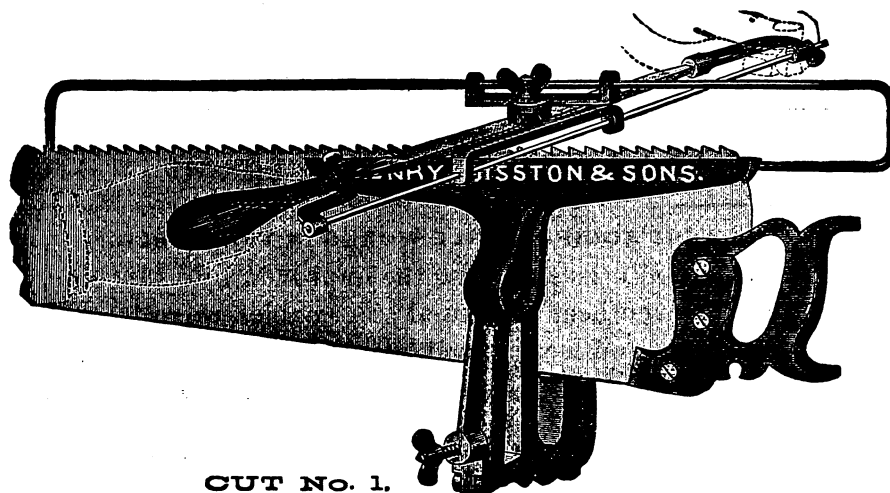
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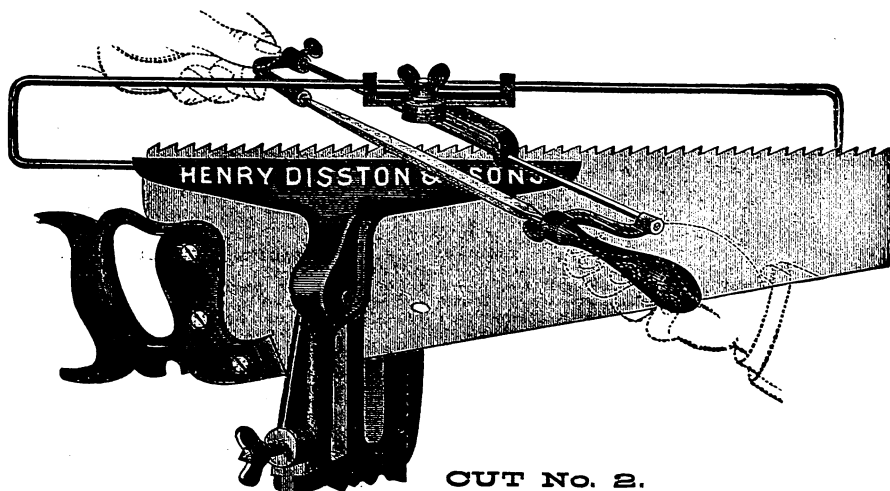
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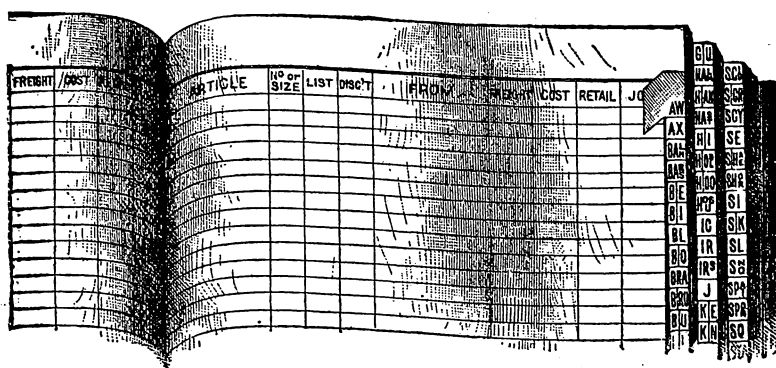
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" Pumps, <b>PUM</b>	" Rules, " <b>RUP</b>	" Grindstones, " <b>GRI</b>
" Bits, " <b>BIT</b>	" Locks, " <b>LO</b>	" Stones, " <b>STO</b>

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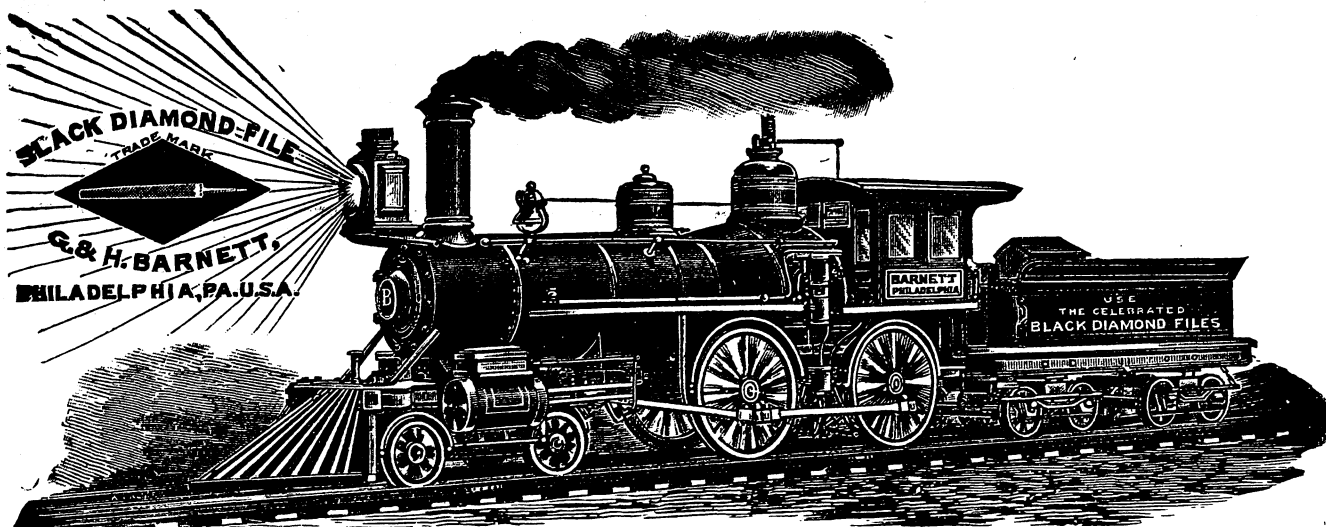
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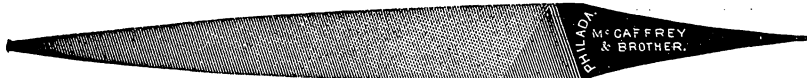
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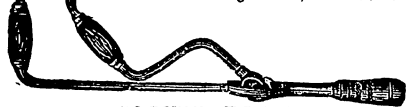
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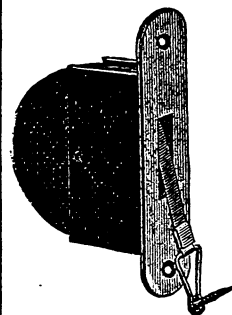
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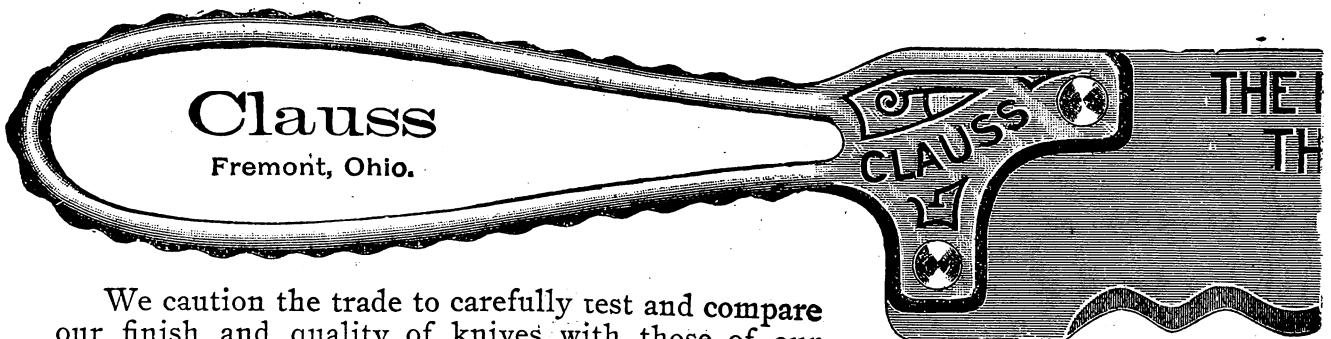
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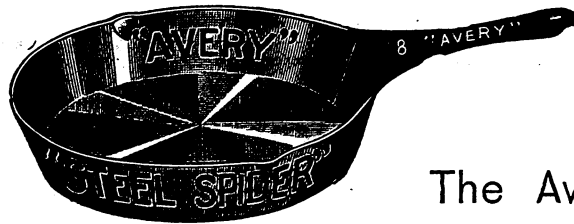


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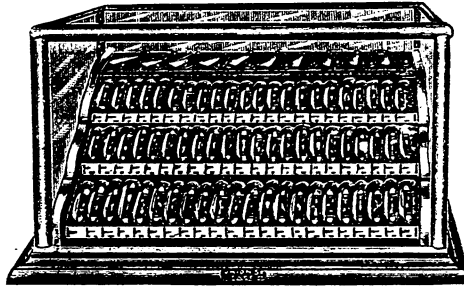


The Avery Stamping Co.,  
CLEVELAND, OHIO.

## The "Dempsey" Patent Cutlery Display Case.

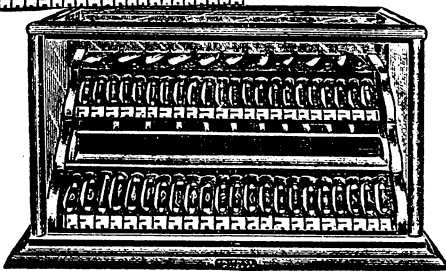
PATENTED OCTOBER 3d. 1893.

**U**NIVERSALLY indorsed by the trade  
It makes the best display. Increases  
sales. Attracts attention to particular  
patterns. Saves time. Economizes space  
Easier adjusted and superior in every  
respect to all others.



Impossible for stock to get in bad shape.  
Made in all lengths and any desired finish.

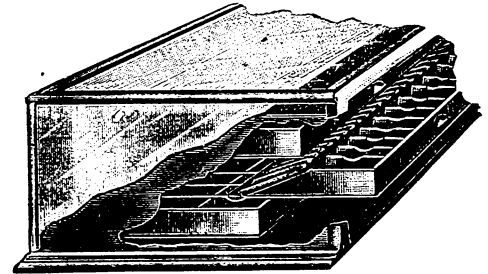
**M**ARKS every article without mar-  
ring or soiling blades. Prevents  
rust. Saves money. Is the most con-  
venient and practical manner of keeping  
stock ever devised. No rubber bands  
to lift up or soil the cutlery.



Electro shows display tray in position  
for selecting goods.

We solicit inquiry  
from home and  
foreign trade.

Sole  
Manufacturers,



Electro shows drawers in position to  
supply or obtain stock.

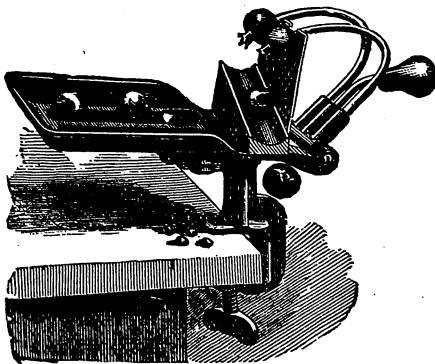
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The Following Leading Firms are our Duly Authorized Agents:

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Henry Keldell & Co., Baltimore, Md.  
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Dixon, Bergeson & Co., Portland, Oregon.  
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Kirkpatrick Hardware Co., Atlanta, Ga.  
W. C. Belknap & Co., Louisville, Ky.  
A. F. Shapleigh Hdw. Co., St. Louis, Mo.  
The Wyeth Hardware & Mfg. Co., St. Joseph, Mo.

Rogers & Baldwin Hdw. Co., Springfield, Mo.  
McGregor-Noe Hdw. Co., Springfield, Mo.  
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**GOODELL COMPANY,**

**Antrim, N. H.,**

Received highest award at World's Columbian Exposition. The only Cherry Stoner made that does not mash the fruit in removing the stone. No skill required to operate it. Cheaper and better than any other. Send in your orders early. Sold by hardware jobbers everywhere.

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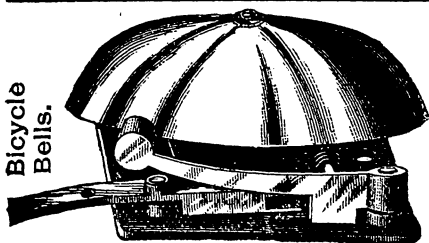
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Mass., U. S. A.

The most extensive Skate Factory in the World.

Bicycle  
Bells.



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Manufacturers of

Sleigh Bells, House, Tea, Han, Gong Bells, &c.

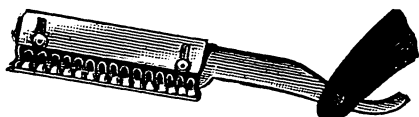


Bicycle Locks.  
Bicycle Bells.

Especially Low Prices.

We manufacture  
hardware specialties  
of all descriptions to  
order.

HAINES & ZIMMERMANN, 407 Cherry St., Phila.



This Guard is the only Guard made that will fit any razor, and can be used right or left handed and never gets out of order. Price by mail 30c. Special prices to dealers.

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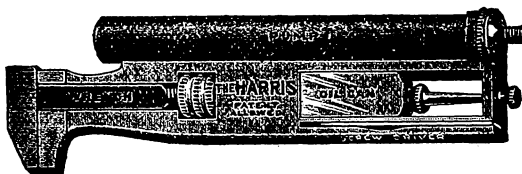
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The Very Highest Grade  
OF  
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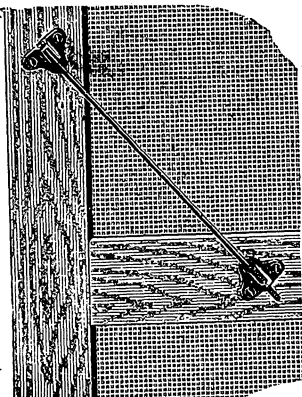
Wrench, Oil Can, Screw  
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Made of drop forged steel, case  
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ounces less than all the other tools  
separate.

Electrotypes on Application. Send for Descriptive Circular.

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Neat, Simple, Effectual and  
Ornamental.

Holds a door from sagging,  
Draws one up that's dragging,  
Costs you but a quarter,  
And that's no more'n it orter.

Sample half dozen in neat box by mail for  
50 cents.

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Ingots, Sheets, Rods, Tubes, Wire and Castings,  
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Write for catalogue.

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At a Lower Price than Poor Machines can be Bought.

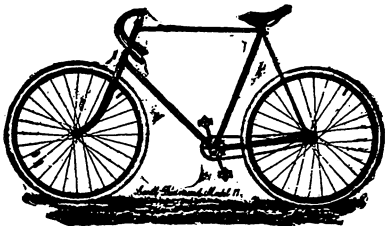
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We have closed out all our other styles and these are going. There is nothing like them at any price and no other price as low.

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RACER—WEIGHT 19 LBS.

HIGHEST GRADE.

All Sizes and Prices. See our line before you purchase.

All the Latest Improvements.

FULLY GUARANTEED.

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BOSTON, - - MASS.

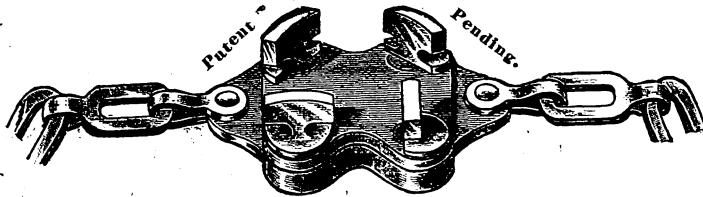
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A KEYLESS LOCK FOR CYCLISTS, TRAVELING MEN, ETC.  
EASILY OPERATED IN THE DARK.

Strong.  
Highly  
Finished.



No  
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Alike.

Special Design made for "Lockers."

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A 7-SHOT, 32 CALIBRE, STANDARD CARTRIDGES.



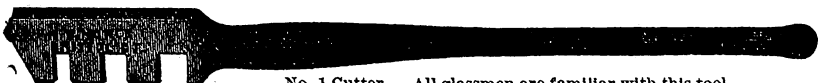
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No. 1 Cutter. All glassmen are familiar with this tool.

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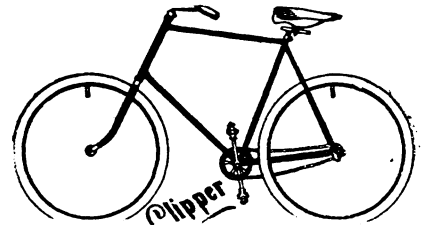
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If you deal in ARMS or AMMUNITION or shoot a Rifle, Pistol or Shot Gun, you will make a HIT by sending for the IDEAL HAND BOOK.

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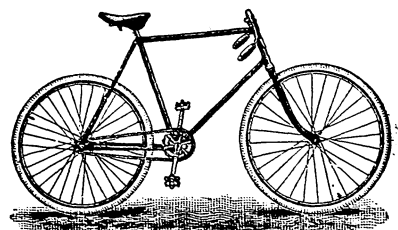
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A wonderful, strong, light wheel, with a dozen points of superiority over all others. Our "new departure" catalogue (free) tells all about it.

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In Design, Workmanship, Material and Finish they are BEST.

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## Manufacturers of SAD IRONS AND HARDWARE.

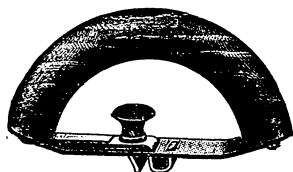
Our catalogue for 1894 having recently been issued, we beg to direct the attention of our patrons to our increased line of standard goods and patented specialties of our exclusive manufacture.

Our improved facilities enable us to maintain a standard of workmanship and quality second to none.

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POTTSTOWN, PA.

General Office,  
GROTON, N. Y.

New York Office,  
90 CHAMBERS ST.



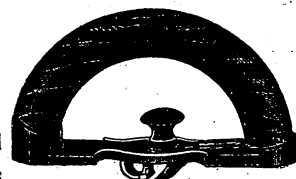
PATENT APPLIED FOR.  
The Steel Stretcher Handle,  
for Mrs. Potts' Sad Irons,  
in Hazel Wood only.  
No. 110.

The Cleveland Wood Turning Co.,  
710-726 Scranton Ave., Cleveland, O.

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NEW YORK OFFICE:

W. H. JACOBUS, No. 90 Chambers St.



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Hazel, Tinned, No. 20.

Reliable Torches are what you want.

Made either for Oil or Gasoline.

These Torches are particularly adapted for use in Factories, Foundries, Machine Shops, Rolling Mills, Blacksmith Shops, Warehouses, &c. They make a strong white light, are free from smoke and are not affected by wind or rain. They are convenient and portable. These Torches can be run at an expense of about one-half cent to one cent per hour, burning a bright, steady light which is ten times greater than the light of an ordinary gas burner.

Write us for prices. A liberal discount given to the trade.

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**Hudson's Garden Hose Mender.**  
So Simple a Child Can Use It.  
Made in three sizes, for  $\frac{1}{8}$  in.,  $\frac{1}{4}$  in. and 1 in. hose.  
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EACH BOX CONTAINS:  
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20 Bands,  
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Sells readily at 75 cents.  
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Send for Full Description.

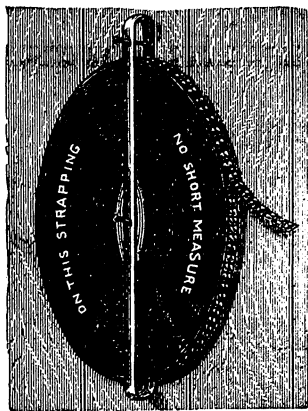
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Send for 226-Page Catalogue.

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Showing Reel hung up ready for use.  
SIX PATENTS.  
Dated: May 14th, 1889; Nov. 25th, 1890.

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### THE U. S. COURT SAYS IN ITS DECISION:

*The defendant admits making and selling Box Straps which clearly contain CARY'S PATENTED INVENTION, although the "Bosses" are shaped differently than those shown in the drawings. "Injunction granted."*

All Goods put up in this style to be genuine must bear the name of the CARY MANUFACTURING CO., stamped on each reel.

**CARY MANUFACTURING CO., 5 to 9 Elm St., NEW YORK.**

## Don't make Mistakes.

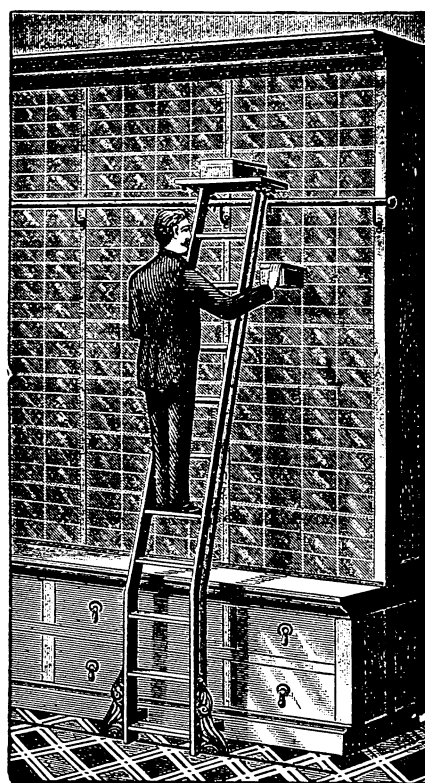
**TO**

**SAVE** time,  
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And to be correct, honest and happy, **USE**

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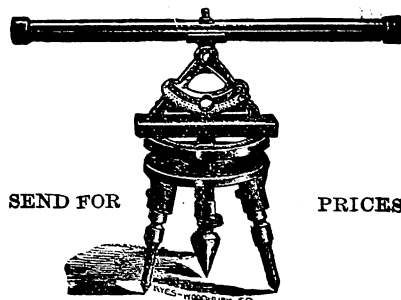
Highest Award Columbian Exposition.

No other Ladder Service can approach the "Bicycle" in ease and convenience of operation. Compared with others they work like a bicycle beside a lumber wagon.

Can be applied to any kind of shelving made. See this space next week for other styles. Send for Illustrated Catalogue and prices to

**THE BICYCLE STEP LADDER CO.,**  
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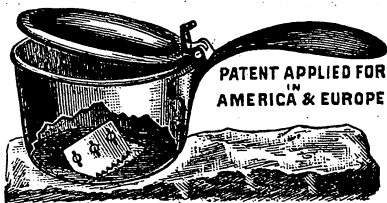
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Manufacturers of Iron Levels  
and Leveling Instruments.



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For Shaving Ice

Coarse or Fine.

PRICES:

No. 33, Tinned, - \$7.20 per doz  
No. 34, Nickeled, - 24.00 "

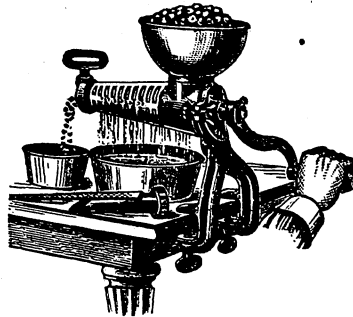
Their use will be appreciated

For Fruits, Drinks, Oysters and  
Clams on the half shell,  
Olives, Celery, Radishes,  
Iced Tea, Sliced To-  
matoes, &c., &c.  
and for many purposes in the  
Sick Room.

The Enterprise M'fg Co. of Pa.

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INVALUABLE FOR MAKING

Wines, Jellies and Fruit Butters.

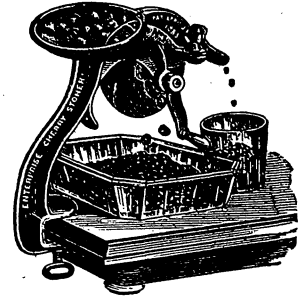
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## Cherry Stoners.

PRICES.

No. 1, Japanned, - \$7.50 per doz.  
No. 2, Tinned, - 9.00 "

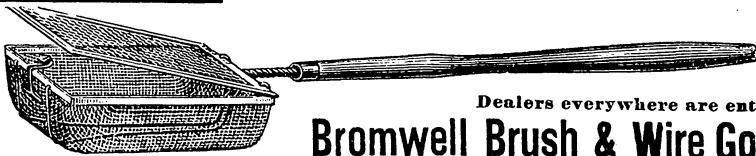
Can be adjusted by thumb screws  
to adapt them to the different sizes of  
Cherry Stones, and will be found  
very rapid in their work and equal to  
the best in the market.



# Low Prices and High Quality.

Our styles of Corn Poppers  
are guaranteed to be all of  
the latest and best.

Write to know what  
our quantity discounts  
are.

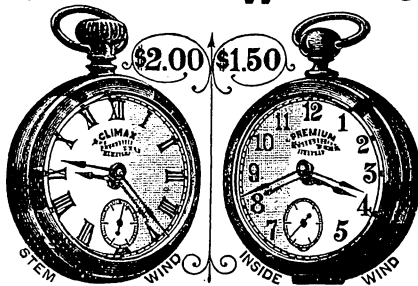


Dealers everywhere are entitled to New Catalogue and New Prices.

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ESTABLISHED 76 YEARS.

Cincinnati, O.

## AMERICAN WATCHES.



During 1894 the sales on these watches amount-  
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Manufacturers of

All Kinds of Tinware and Sheet  
Metal Goods.

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Factory, 103 to 119 N. 3d. St., Brooklyn, E. D., N. Y.

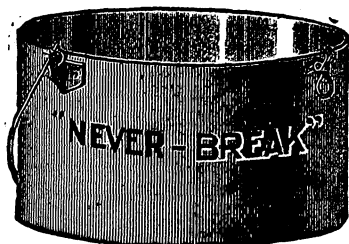
THE CHAS. PARKER CO. MERIDEN  
MANUFACTURERS OF  
THE PARKER GUN VISES THE PARKER LAMP  
WOOD SCREWS COFFEE MILLS,  
CABINET-LOCKS SPOONS &c.



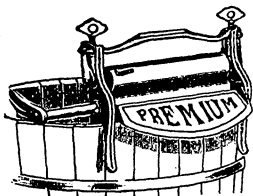
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The Handsomest and Best Mill of this Character in the Market.

We have over sixty other styles and sizes. Catalogues furnished dealers.



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**WROUGHT STEEL COOKING UTENSILS.**  
 MIRROR POLISHED-TINNED-PORCELAINED.  
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 BAKING AND ROASTING PANS,      COOKERS, COFFEE POTS AND      BRASS, BRONZE, NICKEL UM-  
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 MANUFACTURERS OF THE  
**Premium Wringer,**  
 With Automatic Apron Adjustment.  
 SURPLESS, DUNN & ALDER, Direct Representatives,  
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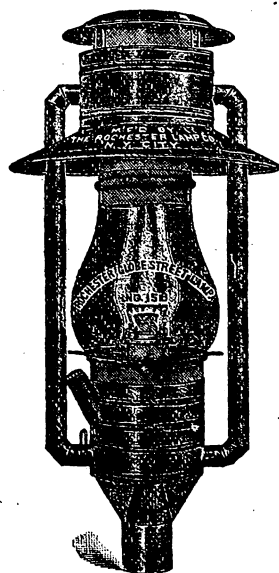
No. 3

Globe Street Lamp.

Light your Streets and Driveways.  
 The S. G. & L. CO.  
**Tubular Globe**  
**Street Lamp**

IS THE Best Street Lamp Manufactured.  
 Equal to the best Gas Light.  
 Will not Blow Out in the Strongest Wind.  
 Will not Smoke.  
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 Automatic Extinguisher.  
 Outside Wick Regulator.  
 Will Burn Four Hours for One Cent.

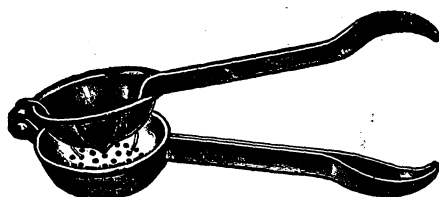
MANUFACTURED BY  
**STEAM GAUGE AND LANTERN CO.,**  
 SYRACUSE, N. Y.  
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**The Rochester Globe Tubular**  
 - - Station and Street Lamp.

It's a long name, but it tells a good deal. It tells you of a new Street Lamp with "The Rochester" Central Draft Burner. A central draft burner (round flame) gives three times the light of an old style flat-wick burner. The first and only Tubular Globe Central Draft Lamp ever made! Storms, rain, snow, sleet or hail do not affect it. Burns all night. Made with either bail or post socket, with 26 inch enamel reflector if wanted, for railroad and other uses. Takes regular No. 3 or 9 street lamp globe, to be had everywhere. For Railroad, Stations, Ware-rooms, Mills, Docks, &c., it is the best lamp ever made. Price, \$6.00; send for trade discount.

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If so you want our Squeezer. Positively the best. Suitable for any size Lemon. Write for catalogue and prices.

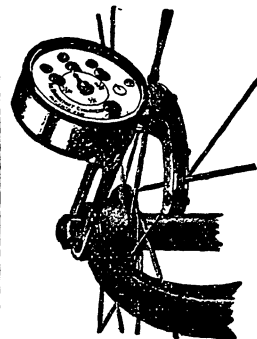
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**BOOKS.**

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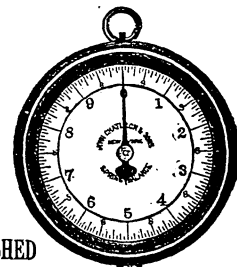
**BRIDGEPORT CYCLOMETER. \$3.50.**  
 Registers 1000 miles accurately and repeats, or can be set back to zero at any time. Perfectly Noiseless, Dust Proof and Water Proof. Nothing to get out of order and can be adjusted to any wheel. A high grade cyclometer within the reach of every bicyclist.



The Bridgeport Gun Implement Co.,  
 313 and 315 Broadway, New York.

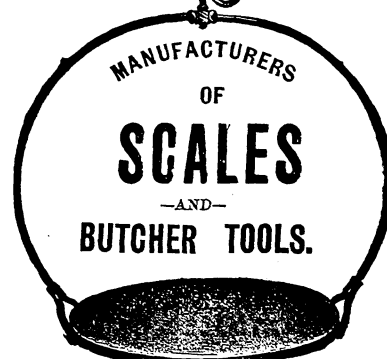
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 PRICE-LIST.



Sole Agents for  
**Foster Bros.' Butchers' Cutlery.**

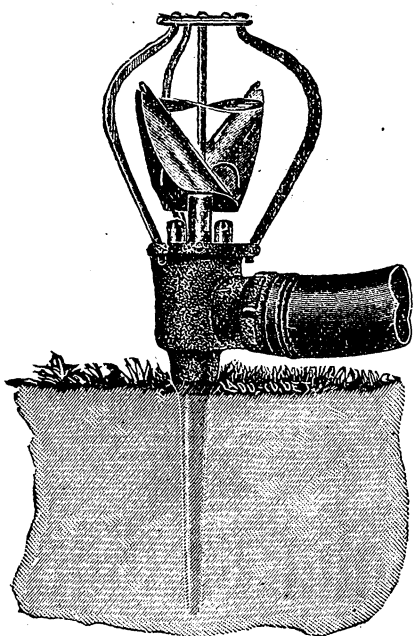


**John Chatillon & Sons, N. Y.**

**The Best Lawn Sprinkler Ever Made at Any Price.**

Imitation is the sincerest flattery. They copy our ideas, but they don't get there with the kind of Sprinkler the people want.

*This Sprinkler will throw Water in a complete Circle or Half Circle as desired.*



Patented October 20, 1891.

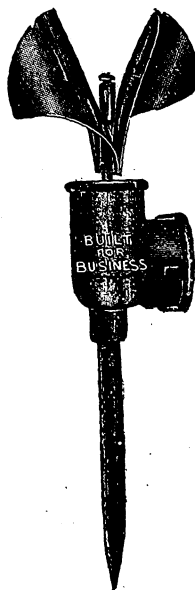
## Bonnette's Arc Lawn Sprinkler.

We claim this is the only perfect Sprinkler in existence. It is simple, will not wear out nor clog up. Its full flow always, whether on the whole or half circle, prevents the straining or bursting of the hose. This is not true of any other sprinkler made. It is well made and handsomely nicked, is boxed singly with full directions how to use it. Its merits are without question pre-eminently superior to any other.

**The Best Low Priced Sprinkler in America.**

## "The HUSTLER" LAWN SPRINKLER.

BUILT FOR BUSINESS.



We down all competition,  
And admire mere opposition,  
Yet under no condition  
Will we budge from our position,  
THAT THIS IS  
The Most Practical,  
The Most Sensible  
AND THEREFORE  
The Most Serviceable

Bonnette's Patent.

Lawn Sprinkler ever put upon the market at a Popular Price.

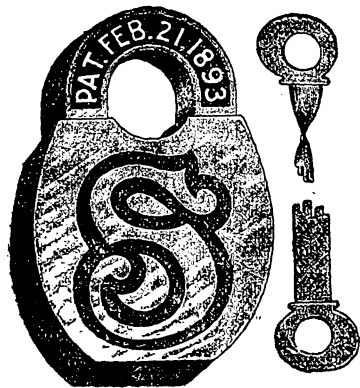
PLEASE SEND IN YOUR ORDERS TO

**JOHN H. GRAHAM & CO., General Agents,** 113 Chambers St., New York City.

BONNETTE ARC LAWN SPRINKLER CO., Bay City, Mich.

GIBBS MANUFACTURING CO., Canton, Ohio.

**THE SCHULTZE LOCK  
UNPICKABLE.**



SEND FOR CIRCULAR.

MANUFACTURED ONLY BY

**The Schultze Mfg. Co.**

Cor. Emerald & Wishart Sts., Phila., Pa.

**P. J. Conroy & Co.,**

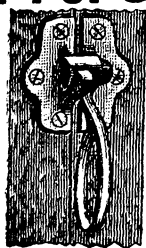
Paschall, PHILADELPHIA.

**"CONROY"  
Refrigerator Door**

**Fasteners**

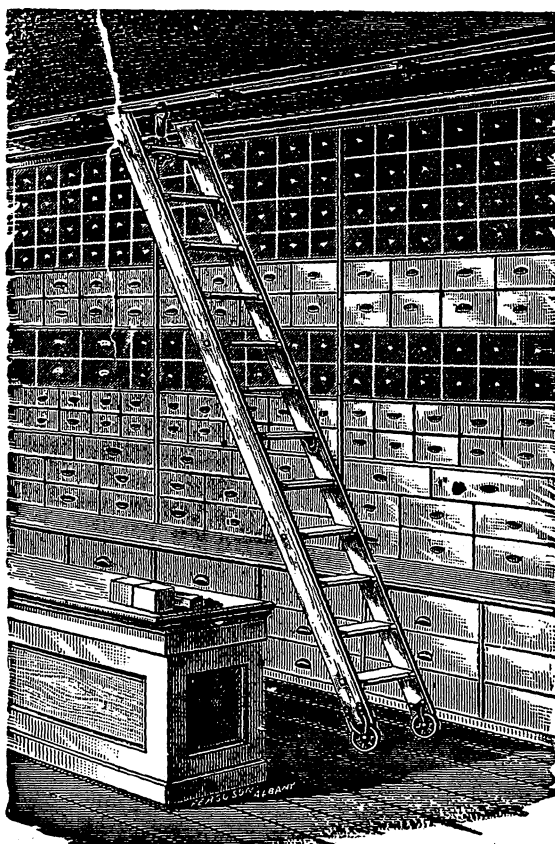
Have rapidly supplanted all others.

Refrigerator Trimings



Pat. Dec. 15, '85

## THE "NOISELESS" STORE LADDER.

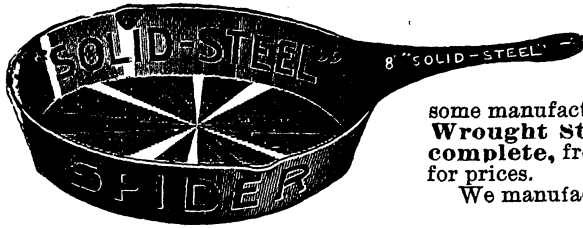


The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by

**M. CROISSANT,**

**ALBANY, N. Y.**

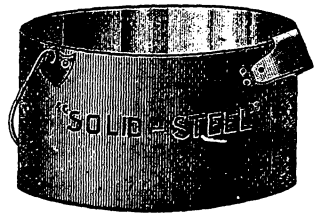
**"SOLID-STEEL" SEAMLESS HOLLOW WARE.**

No seams, no Rivets in "Solid-Steel" Ware.

**Brilliant Finish.**

Notwithstanding the claims made by some manufacturers' agents our spiders are made from Wrought Steel, Without Seams or Rivets, complete, from a single piece of metal. Write for prices.

We manufacture our own goods.



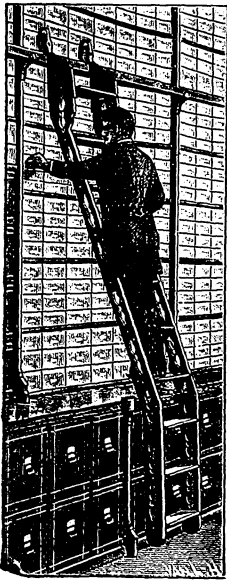
"Solid-Steel" Maslin Kettle.

**The Cleveland Stamping & Tool Co., Cleveland, O.**

**We do Light and Heavy Stamping and Blanking. Also build Dies and Stamping Machinery.**

# An Investment

- ✱ That soon pays for itself, and a fixture you will wonder
- ✱ how you have got along without. Hundreds of recom-



mendations to this effect. This is without doubt the best device of the kind on the market to-day. Steel rail planed to get the smoothest surface. Brackets made to fasten to standards, pilasters, or shelving direct. Can be adjusted to shelving with wide or narrow ledge, and can also be fitted where there is no ledge and can be used on circular rail as well.

**WORLD'S FAIR AWARD.**

A postal card will get our Catalogue.

**Morley Brothers,**

123 N. Washington Ave., Saginaw, Mich.

# WATER COOLERS.



**Handsome  
New Designs.  
Double Walled.  
Packed.**

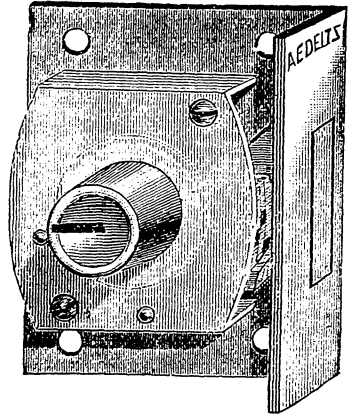
No. 82,	2 gals.	.....	\$3.40
" 83,	3 "	.....	4.00
" 84,	4 "	.....	4.50
" 86,	6 "	.....	5.00
" 93,	8 "	.....	5.25
" 94,	10 "	.....	5.50
" 96,	12 "	.....	6.00
" 98,	14 "	.....	6.50
" 110,	16 "	.....	7.00
" 114,	18 "	.....	7.50

Discounts Furnished upon Request.

**Sidney Shepard & Co.,  
BUFFALO, N. Y.**

**C. Sidney Shepard & Co.,  
CHICAGO, ILL.**

**A. E. DEITZ**



No. 51 Lock.

**J. C. McCARTY & CO., Agents,  
97 Chambers and 81 Reade Sts., New York.**

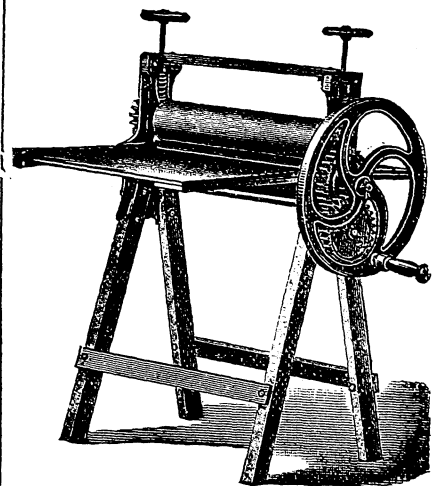
Factory, **BROOKLYN, E. D., N. Y.**

## The Family Mangle.

**WARRANTED TO DO  
Better Work than Hand-Work.**

**SAVES** all the fuel.  
two-thirds the work.  
Keeps the linen whiter.

We Guarantee Every Machine.



Send for descriptive circular to  
**S. C. Johnson, Racine, Wis.  
Agents Wanted.**





# THE VICTOR DOUBLE STORE LADDER.

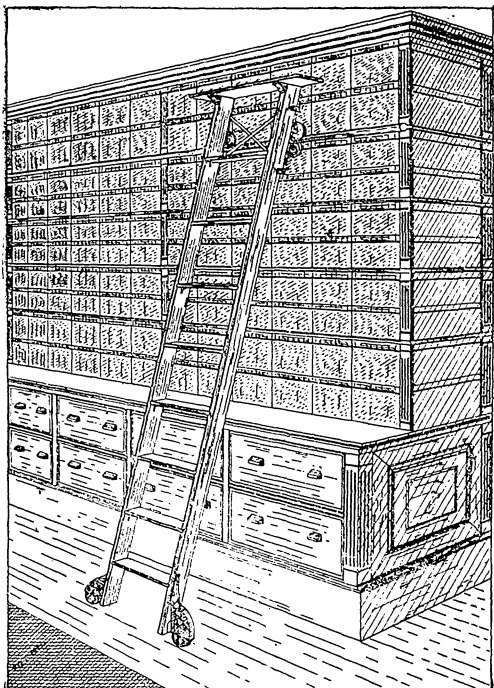
**WORKS** ON A NEW PRINCIPLE.  
EASILY.  
NOISELESSLY.

**HANDY** ILY ADJUSTED  
TO USE.

**COSTS** SO LITTLE THAT  
EVERY ESTABLISHM'NT  
CAN AFFORD TO HAVE IT

All orders are sold subject to thirty days' trial and if not satisfactory may be returned at our expense.

SEND FOR CIRCULAR.



**DON'T**

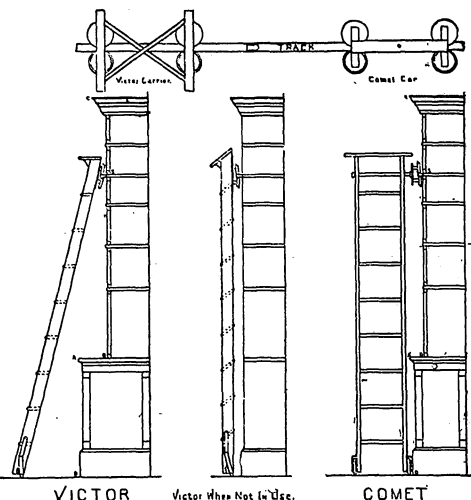
Risk your neck  
on a barrel

**DON'T**

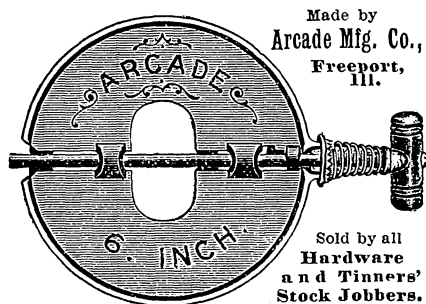
Try to jump  
with mouth full of  
screws and hands full  
of something else.

**DON'T**

Fail to send for  
price of Victor Lad-  
ders.



**GOBURN TROLLEY TRACK MFG. CO., HOLYOKE, MASS. ALSO PARLOR, BARN AND FIRE-DOOR HANGERS.**



**VADE MECUM.**

A work of reference for the use of Architects, Architectural Iron Workers, Builders, Blacksmiths, Bookkeepers, Boiler Makers, Contractors, Civil, Mechanical Hydraulic, Mining, Stationary, Marine and Locomotive Engineers. For men of Machine Shops, Firemen Master Mechanics of Railroads, Master Car Builders Machine Shop Proprietors, Machinery Jobbers, Machinery Salesmen, Machinists, Pattern Makers, Railway Superintendents, Railway Supply Agents, Roadmasters, Superintendents of Factories and Business Men generally.

Compiled and Arranged by

D. B. DIXON,

And with a most exhaustive Electrical Department by

THOS. G. GRIER,

A Prominent Specialist.

480 Pages, 8 1/4 x 5 1/2 inches, Cloth, \$2.50.

Sent, post-paid, upon receipt of price, by

DAVID WILLIAMS, Publisher and Bookseller

96-102 Reade Street, New York

Patented April 25, 1893.



**NEW WATER MOTOR, \$5**  
**BOLGIANO'S LITTLE GIANT, No. 1,**

Will run your Sewing Machine, Fans and other Light Machinery.

A Week's Work  
Done in a Day  
No Plumbing  
Required.

SOMERVILLE, MASS., Nov. 21, 1893.  
THE BOLGIANO MFG. CO., Baltimore, Md.  
Gentlemen:—Your No. 1 Motor just received. I am more than pleased with it. It will do all you claim for it. I have tried it with several different kinds of light machine work. I shall always have the best word to say for this little wonder. Yours truly,  
CHAS. E. PARKEURST, 79 Walnut St.

NOBLESVILLE, IND., Jan. 29, 1894.

THE BOLGIANO MFG. CO., Baltimore, Md.

Gentlemen:—The "Little Giant" Water Motor came to hand in due time, and works the sewing machine like a charm.

Yours very truly,  
NOBLESVILLE MILLING CO.

**No. 2, \$10** Fans, Ice Cream Freezers, Lathes, Scroll Saws, Church Organs, etc.

COLORADO SPRINGS, COLORADO.

THE BOLGIANO MFG. CO., Baltimore, Md.  
Gentlemen:—We received the "Little Giant" Motor No. 2 on April 28, and have tested it in every possible way, and find that it works perfectly. At present it is running an eight and twelve old style Gordon press, and takes it at a very fast rate. We are more than pleased with it, and we will recommend it to everybody as a safe investment for their money. Yours respectfully,  
WOODS BROS.

**NO. 3 MOTOR, \$15.** For Fans, Printing Presses, Grindstones, All Sizes of Light Fans for sale  
Coffee Mills, Washing Machines. Send for Circulars.

**NEW HOT AIR \$3**  
**GAS IRON, 3**

Bolgiano's Perfection Gas Iron enables you to do your ironing without the use of a stove, and is in every way superior to anything of the kind ever offered the public. Gets hot in 5 minutes and costs 5 cents a day to heat.

You may send me One Dozen Perfection Gas Irons. Sold 700 charcoal irons. Expect to sell many more of yours.  
JOHN WANAMAKER, Philadelphia, Pa.

Send for Descriptive Circulars.

THE BOLGIANO MANUFACTURING CO.,  
WHOLESALE AND RETAIL,

415 WATER ST., BALTIMORE, MD.



BOLGIANO'S PERFECTION GAS IRON,  
Patent applied for, 1894.

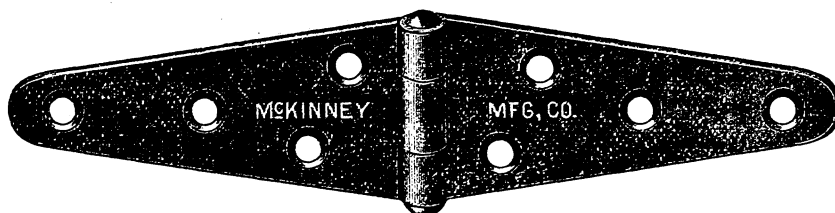


# STEEL HINGES AND BUTTS.

— STANDARD GOODS. —

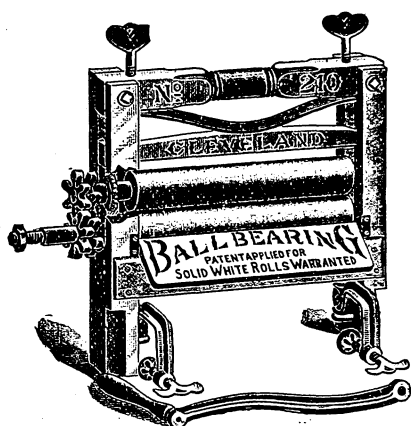
McKINNEY MFG. CO.. - ALLEGHENY, PENN.

SEND FOR  
LIST.



ORDERS FILLED  
ON SIGHT.

**"NONE BETTER."**



## A GOOD PROFIT TO DEALERS

This Wringer has **BALL BEARINGS** same as a bicycle. Runs so easy it's play to use it. No other like it. Best made. Sells for more than the common kind. Women using it won't have any other, tell their neighbors, sales increase, everybody satisfied. Pays you to push it.

SEND FOR SAMPLE.

ALL OTHER KINDS OF WRINGERS.

**THE PEERLESS MANUFACTURING CO.,**  
CLEVELAND, OHIO.

We also make High Grade Bicycles.

OSGOOD & HOWELL, Pacific Coast Agents,

132 Market St., San Francisco, Cal.

### THIRD REVISED EDITION.

## THE IRON AGE STANDARD HARDWARE LISTS

FOR USE IN PRICE BOOKS.

Compiled by R. R. WILLIAMS, Hardware Editor of The Iron Age.

This pamphlet contains the principal standard Hardware price-lists in as clear and compact an arrangement as possible, so as to permit their being advantageously cut out and inserted in the price book. In order to make them adapted to this use they are printed on thin and tough paper of fine quality and on only one side of the paper.

#### Saucepans and Round Boilers.

Pnts.	Plain	Turned.	Turned or Engr.
1	\$9.30	.35	.39
1½	.32	.37	.44
2	.35	.39	.48
3	.42	.47	.56
Quarts.			
2	.50	.56	.68
2½	.53	.59	.68
3	.55	.62	.73
4	.60	.68	.84
5	.65	.75	.96
6	.70	.81	1.11
7	.75	.84	1.21
Gallons.			
2	.85	.96	1.31
2½	1.05	1.18	1.56
3	1.20	1.35	1.70

The success of the effort to give the lists in small space is illustrated in many of the lists, in which a clear and condensed arrangement is secured. For instance, the wrench list occupies but 3 inches by ½ inch, while the list of Stove Hollow Ware, in very small space, gives the list prices on a large and important line of goods which often occupy several pages in catalogues. In several lists, such as Strap and T Hinges and Butts, a new arrangement is adopted, which is regarded as presenting these lists in a very convenient as well as condensed form.

As is obvious from the lists herewith reproduced, the shape and size of the different lists varies greatly, the aim being to give each list the smallest and most convenient arrangement possible. None of the lists are, however, more than 3½ x 6 inches in size, very few of them being as large as this and most of them very much smaller. In use it is intended that they shall be trimmed closely before they are inserted in price books, when they may be attached either by one edge close to the hinge of the book, as will, perhaps, be most convenient with the larger lists, permitting the use of the entire page for memoranda, or the smaller lists may be pasted on the page in connection with the entries in regard to discounts, freights, &c. Many of the lists are so compact in arrangement as when thus inserted to leave ample room for recording quotations.

#### Wrenches.

Inches.	6	8	10	12	15	18	21
Black...	\$9.00	\$10.00	\$12.00	\$14.00	\$24.00	\$30.00	\$36.00
Bright..	10.00	11.00	14.00	16.00	26.00	32.00	38.00

#### Stove Hollow Ware.

Ground and Unground.

POTS, KETTLES, ETC. (CAST IRON.)

No.	6	7	8	9	10	11
Pots.....	\$0.65	.75	.85	1.00	1.25	1.75
Kettles.....	.55	.65	.70	.85	1.00	1.40
T Kettles.....	.75	.80	.90	1.00	1.25	....
Spiders.....	.27	.30	.35	.40	.50	.60
Griddles Round	.22	.25	.27	.30	....	....
" Long..	.40	.50	.60	.75	....	....

SCOTCH AND YANKEE BOWLS.

No.	1	2	3	4	5	6
Scotch Bowls..	\$0.35	.40	.45	.50	.60	.70
Yankee Bowls.	.35	.45	.55	.65	.75	.90

Some merchants use this pamphlet for reference, checking off invoices, etc., as it gives the leading lists in a more convenient form than they can otherwise be obtained. The lists are, however, intended primarily to be cut out

#### Glue Pots.

Tinned or Enameled

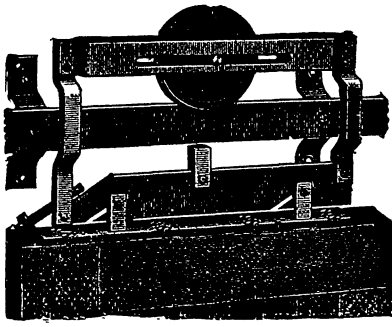
No. 4/0....	\$4.50	No. 2 .....	\$8.40
3/0....	5.00	3.....	10.26
2/0....	5.50	4.....	12.42
0 .....	6.00	5.....	14.58
1 .....	6.75	6.....	16.94

and inserted in price books, and can be used in connection with any of The Iron Age Hardware Price Books.

That the Standard Hardware Price Lists meet a want of the trade is evident from the fact that a Third edition is already called for.

EVERY HARDWAREMAN SHOULD HAVE A COPY. Price 25 cts.

Sent, postpaid, on receipt of price, by DAVID WILLIAMS, Publisher, 96-102 Reade Street, New York.



## LANE'S PATENT NOISELESS STEEL PARLOR DOOR HANGER.

This Hanger is made of Steel.  
The Wheel is also Steel, except the filling or tread.  
The Track is of Steel—a single one only.  
The Hanger is Anti-Friction.  
More nearly Noiseless than any other.  
Ease of adjustment.

Can be erected with half the labor others require.  
Track will not swell, shrink or warp out of true.  
No cutting of doors.  
No matching of hardware.  
Simplicity in all its parts.  
Durability.

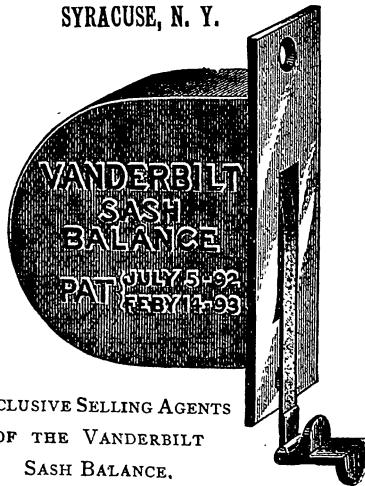
ALSO LANE BARN DOOR HANGER AND TRACK. SEND FOR CIRCULARS.

Manufactured by

**LANE BROS., Poughkeepsie, N. Y.**

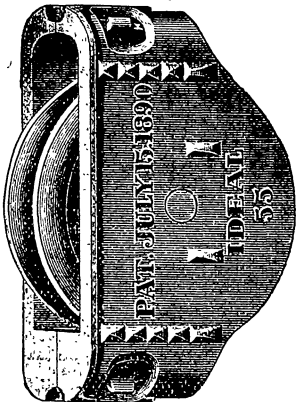
**JOHN H. GRAHAM & CO., General Agents, 113 Chambers St., New York.**

**E. C. STEARNS & CO.,**  
SYRACUSE, N. Y.



EXCLUSIVE SELLING AGENTS  
OF THE VANDERBILT  
SASH BALANCE.

**Ideal Sash Pulley, No 55.**



Adapted for auger socket or machine made mortise  
Applied without chisel or screws, quickly and a perfect fit in every case. The only all round Sash Pulley made. Sample free. Price on application.

**STOVER MFG. CO.,**  
145 River St., Freeport, Ill.

**THE WILCOX & HOWE COMPANY,**  
BIRMINGHAM, CONN.

MANUFACTURERS OF

**A Full Line of Carriage Hardware**  
**ALSO SPECIAL FORGINGS.**

Estimates cheerfully given. Send for Catalogue.

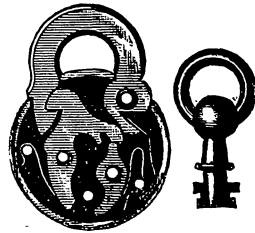
**SASH WEIGHTS**

**E. E. BROWN & CO.,**

McKean and Meadow Sts.,

PHILADELPHIA PA.

## PATENT PERFECTION PADLOCK.



*Eight Tumblers, Key Turning Both Ways.*

Sizes, 1/4 inch to 2 1/4 inches, of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also, 1/2 and 3/4 inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world.

Adopted by the United States Treasury for bonded warehouses.

**AMES SWORD CO., Chicopee, Mass.**

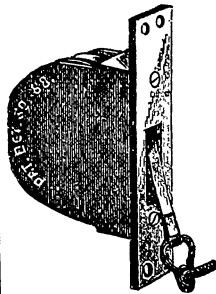
Send for Price-Lists and Circulars.

## DOES IT PAY?

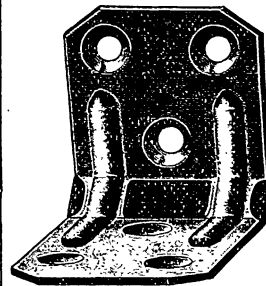
To buy an inferior article, which your trade condemns, when you can get

## THE CALDWELL SASH BALANCE.

The best material, right principle and care in making and testing have made it the **LEADER** for five years. Write to



**CALDWELL MFG. CO., Rochester, N. Y.**



No. 997 1-2.

## Wrought Steel CORNER BRACES Corrugated.

**A SUPERIOR ARTICLE.**

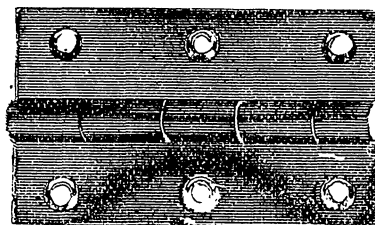
The corrugation adds largely to the strength and improves the appearance.

**LIST PRICES.**

Plain Steel, per dozen, 30¢. Japaned, per dozen, 40¢.  
Bronzed, per dozen, 45¢.

**LIBERAL DISCOUNT TO THE TRADE**

**THE STANLEY WORKS,** NEW BRITAIN, CONN.  
79 CHAMBERS ST., N. Y.



## Cast Brass Butt Hinges

IN STOCK AND FOR SALE BY

**W. & J. TIEBOUT,**

Nos. 16 & 18 Chambers Street, New York,

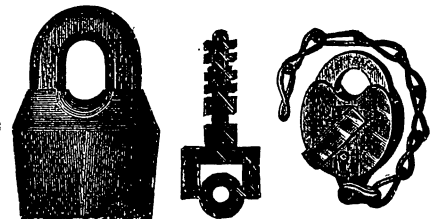
MANUFACTURERS OF

**BRASS, GALVANIZED & SHIP CHANDLERY  
HARDWARE.**

ESTABLISHED 1879.

## KEYSTONE LOCK WORKS.

E. T. FRAM, Lancaster, Pa., U. S. A.



Originators, designers, patentees and manufacturers of all the leading popular styles of **PADLOCKS**, Key-Locking Scandinavian with our patent Inter-Locking Tumblers; the only reliable lock of this style ever made. **SELF-LOCKING** Scandinavian of the highest type of perfection. Dust Proof Railroad, Freight Car and Switch Padlocks. Brass, Bronze, Steel and Malleable Iron Padlocks for all purposes and in all finishes. 131 different kinds. Write for our new 100-page catalogue.

**SURPLESS DUNN & ALDER, General Agents,**  
97 Chambers St., NEW YORK

# RICHARD ECCLES,

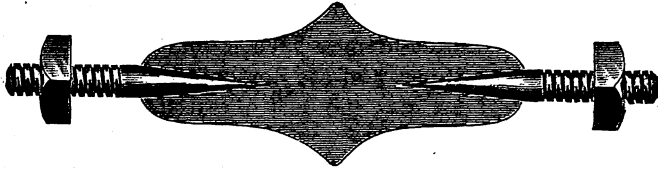
AUBURN, N. Y.,

—MANUFACTURER OF—

## CARRIAGE FORGINGS,

Couplings, Clips, King Bolts, Fifth Wheels, &c.

SEND FOR SUPPLEMENT TO CATALOGUE,



Showing a full line of Axle Clips, Spring Bar Clips and Three Piece Saddle Clips.

SEND FOR CATALOGUE AND SUPPLEMENT.

# SASH WEIGHTS!

NORTON BROTHERS,

Manufacturers,

Office: 813 Masonic Temple, CHICAGO.

WORKS AT MAYWOOD, ILL.

## WHY USE WOODEN OR HEAVY STEEL BLOCKS

WHEN THE STEEL AND IRON

# TACKLE BLOCKS

—MADE BY—

The Cleveland Block Co.,

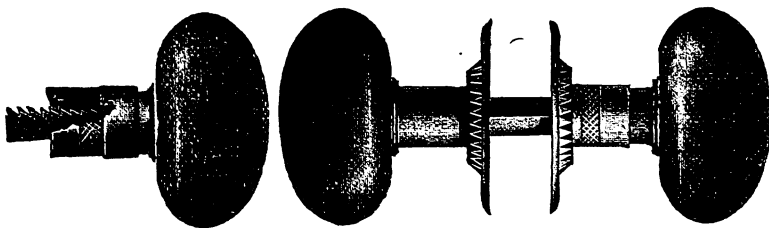
CLEVELAND, OHIO, U. S. A.,

ARE BETTER IN EVERY WAY.

No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable.

General Agents: Topping Brothers, 92 Chambers Street, New York.  
New England Agents, - Dodge, Haley & Co., 212 High Street, Boston.

Sectional cut showing construction of knob.

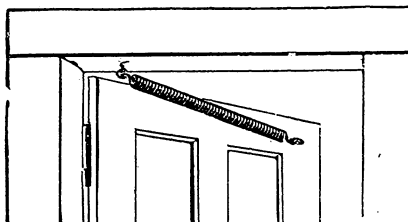


Half size cut of knob as applied to door. No side screws or adjusting washers.

Don't you want your stock to represent the latest and most improved up to date Hardware? The Whipple Patent Door Knob is the latest and best Door Knob attachment ever made. Give it a trial. PERRY & WHIPPLE CO., New Haven, Conn.  
New York Sales Agent, E. G. SHEPARD, 142 Chambers Street.



## THE PERFECT DOOR SPRING.



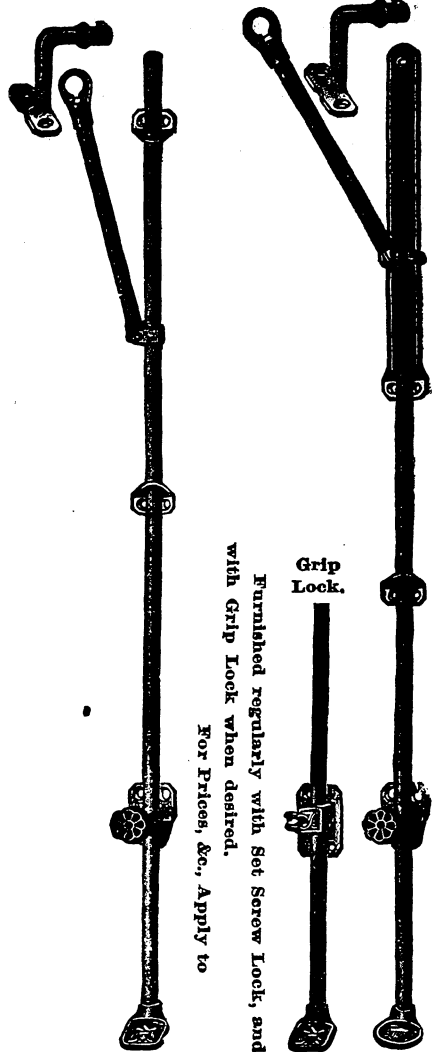
Cheap, Simple, Durable, Effective.  
Best Screen Door Spring made. Send for our list of references, comprising some of the first houses in the land. They sell readily, and that is what you are looking for. Drop us a postal.

COILED WIRE BELTING CO.,  
40 & 42 Noble St., Jersey City.

## TRANSOMLIFTERS

"EAGLE."

"SHIELD."



Furnished regularly with Set Screw Lock, and with Grip Lock when desired.  
For Prices, &c., Apply to

J. F. WOLLENSAK, PATENTEE  
CHICAGO, ILLINOIS.

## READING HARDWARE COMPANY.

"VASSAR" Cylinder  
Rim Night Latches and  
Dead Locks are no trouble  
to put on.

The Patent Spindle is  
self adjusting to doors of all  
thicknesses, without the  
bother of filing, cutting or  
fitting.

96 & 98 Reade Street, New York.

514 Commerce Street, Philadelphia.

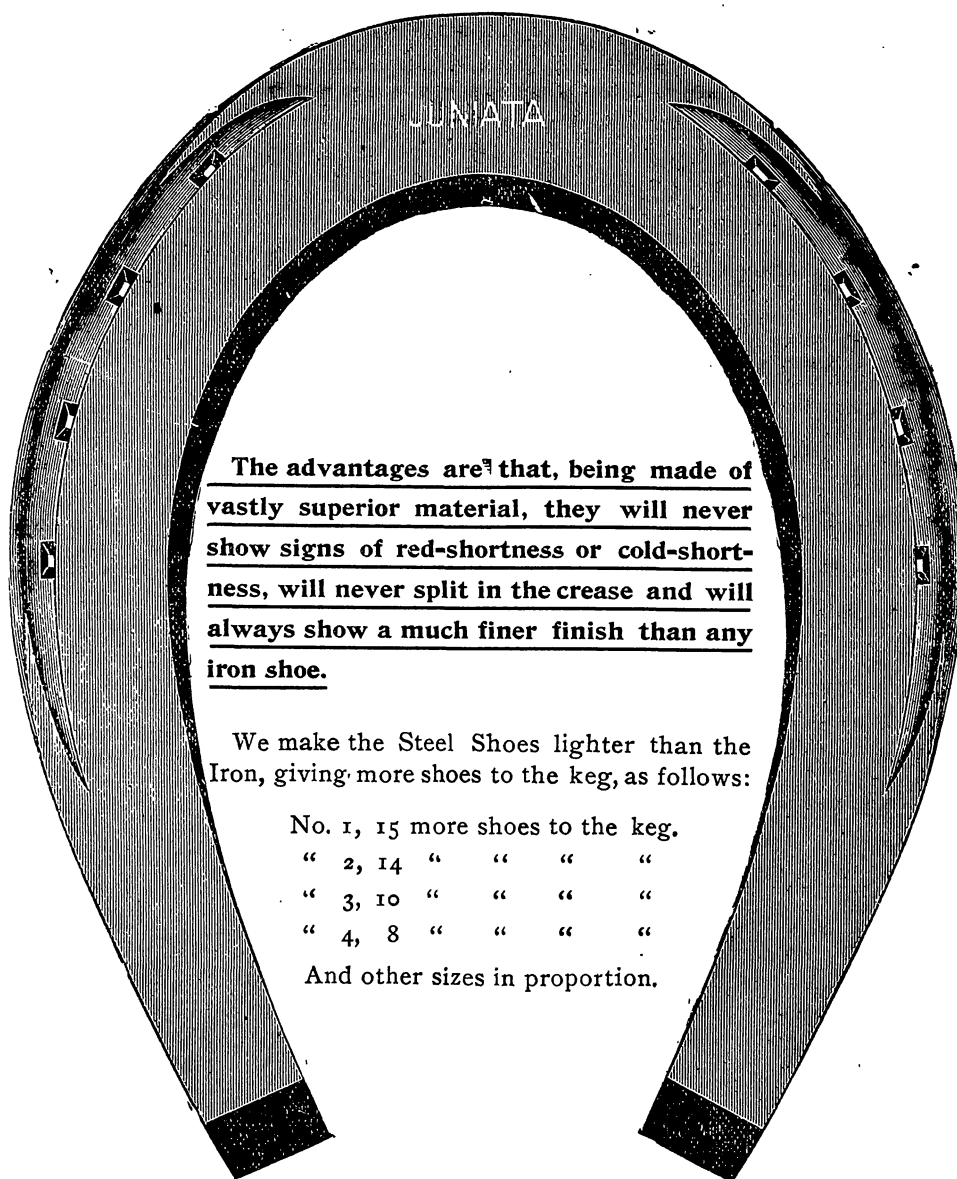
73 Wabash Avenue, Chicago.

Factories, - READING, PA.

# STEEL HORSE SHOES.

SHOENBERGER & CO., PITTSBURGH, PA.,

After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes, and are now making from this steel Extra Swaged and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors. We are at present making our Roadster Pattern Horse Shoes out of Iron, but we will make them of Steel also within a short time.



The advantages are that, being made of vastly superior material, they will never show signs of red-shortness or cold-shortness, will never split in the crease and will always show a much finer finish than any iron shoe.

We make the Steel Shoes lighter than the Iron, giving more shoes to the keg, as follows:

No. 1, 15 more shoes to the keg.

" 2, 14 " " " "

" 3, 10 " " " "

" 4, 8 " " " "

And other sizes in proportion.

No. 2 EXTRA SWAGED FRONT.

We also beg to say that we have introduced improved machinery into our new factory and have doubled our capacity, and are now prepared to furnish the best shoe, either iron or steel, ever offered to the trade.

We would also call your attention to our Improved Steel Toe Calk, equal to any in the market. To secure the best wearing qualities use sand or borax in welding on a calk and cool off at a dark red, or still better, cool off without plunging in water. We make sizes numbers 1, 2, 3, 4, 5 and 6, packed in 25-pound boxes.

Write to us for information and prices, or apply to jobbers and dealers, who sell them everywhere.

## SHOENBERGER & CO.,

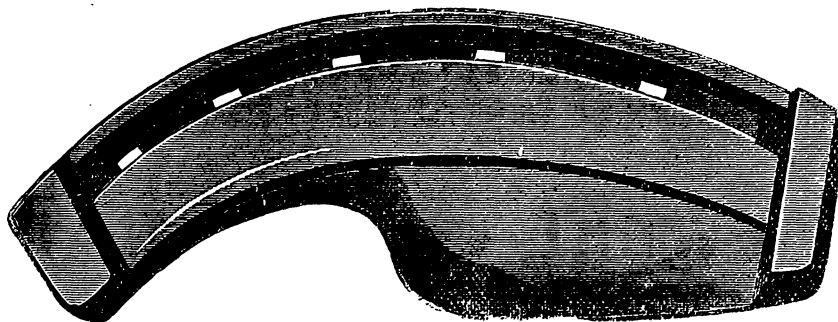
JUNIATA IRON AND STEEL WORKS - - - PITTSBURGH, PA.

# SCRANTON FORGING CO.,

SCRANTON, PA.

## CARRIAGE HARDWARE AND SPECIAL DROP FORGINGS.

FORGED  
OX  
SHOES.



Made under Deebie's Patent, Aug. 9, 1887.

Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

IT IS JUST RIGHT.



## HORSE AND MULE SHOES.

Superior Quality, Shape and Finish.

BRYDEN HORSE SHOE CO.,

CATASAUQUA, PA.

RHODE ISLAND PERKINS HORSE SHOE CO.,  
MANUFACTURERS OF

Horse and Mule Shoes of the Perkins Pattern.

SPECIALTIES:—X L Steel Shoes, Toe Weight Shoes and Goodenough Shoes.

Works at Valley Falls, R. I.

Office, 31 Exchange Place, Providence, R. I.

F. W. CARPENTER, Pres.,

C. H. PERKINS, Gen. Manager,

R. W. COMSTOCK, Sec'y,

CHARLES R. STARK, Treas.

J. C. McCARTY & CO., Agents - 97 Chambers Street, New York.

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JUST TRY THEM and YOU will say they excel all others.

MANUFACTURED BY

DIAMOND STATE IRON CO.  
WILMINGTON, DELAWARE.

Other "high grade" specialties in Rivets, Spikes, Splice Bars, Track and Machine Bolts, Blaz Nuts, Stay Bolt Iron, Horse Shoe Iron, Bar Iron, &c.

PHILADELPHIA OFFICE,  
206 So. Fourth St.

{ Correspondence invited }

NEW YORK OFFICE,  
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Elegant Iron.

Beautiful Shape.

HORSE SHOES,

Light, Medium and Heavy.

MULE SHOES,

Light, Medium and Heavy.

Illustrated booklet and prices to all parts of the world on application.

OLD DOMINION IRON AND NAIL WORKS CO.,

ARTHUR B. CLARKE, President.

Chicago Office, 45 La. Salle St.

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## HORSE SHOES.

"Burden Best"

Iron

Boiler Rivets.

The Burden Iron Co.

TROY, N. Y.

## PHOENIX HORSE SHOES.

PHOENIX HORSE SHOE CO.,

ROLLING MILLS AND FACTORIES,

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Joliet, Ill.

NEW YORK OFFICE, No. 66 Reade St.

Standard Horse Shoe Co.,

Manufacturers of

HORSE AND MULE SHOES.

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4 Liberty Square, Boston, Mass.

**HIGHEST AWARD**  
—AT—  
**World's Columbian Exposition.**

In the tests submitted before the judges on awards  
the Capewell No. 6 was shown to be 17 per cent. tougher  
than No. 8 of other makes.

**CAPEWELL HORSE NAILS,**  
—MADE BY—  
**THE CAPEWELL HORSE NAIL CO., - - - HARTFORD, CONN.**

Office of D. G. BURNHAM,  
Director of Works, World's Columbian Exposition,  
JACKSON PARK, CHICAGO, ILL.

October 28, 1893.

To THE CAPEWELL HORSE NAIL CO.:  
Gentlemen—I have used your horse nails here on the horses belonging  
to the World's Columbian Exposition, and I think they are far superior  
to any others that I have ever used. As I have been in the  
horseshoeing business for about twenty-five years, I know  
what I am talking about.

Very respectfully,  
HERMAN J. HENKE,  
Foreman Blacksmith, World's Columbian Exposition.

"The Best Driving Nail."

"The Best Nail to Hold."

The Capewell Patent Corrugated Horse Nail.

Needs No Clinching.

# Highest Award

FOR  
**Supreme Excellence**  
TO  
The **PUTNAM** Hot=Forged and  
Hammer=Pointed Horse **NAILS,**



At the *World's Columbian Exposition* at Chicago. A medal and diploma worded:  
*"Supreme excellence in material, method in manufacture, and quality of finished product; elasticity and smoothness combined with holding power in clinch.  
 It allows the use of very small nails."*

There is nothing beyond "supreme excellence," nor is there anything comprised in a horse nail, except the "material from which it is made," "the method of manufacture," and "quality of finished product."  
 Putnam nails, by their "elasticity," give slightly to the expansion and contraction of the hoof while the horse is in motion; by their "smoothness," do not enlarge the nail holes in the hoof, while their "supreme excellence," in "holding power in the clinch," enables them to hold the shoe in the hardest service until worn out.

By the "use of small nails," large holes are avoided and money saved to the smith.  
 Thus it will be seen that the officials of the *World's Columbian Exposition* recognize what qualities go to make up a good horse nail and that only the "Putnam" contains them all.

**PUTNAM NAIL CO.,**  
Neponset, Boston, Mass.



## Of Best Material and Workmanship.

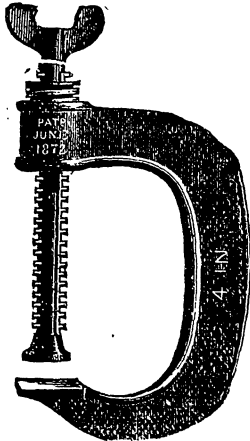
**P. F. BURKE,** DEVELOPER & CO.  
**Manufacturer of**  
**PATENT STEEL**  
**(Blunt and Sharp)**  
**TOE-CALKS.**  
 —ALSO—  
**BURKE'S IMPROVED**  
**HORSESHOERS'**  
**FOOT VICE.**  
 Send for Circulars.

**360 Dorchester Av.** Die for Welding  
**BOSTON, MASS.** Sharp Calks.

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PATENTED ARTICLES  
OF  
**MALLEABLE IRON.**  
Hammer's Adjustable Clamps.



**Hammer's** Malleable Iron Oilers, 3 Sizes.  
Malleable Iron Hand Lamps.  
Malleable Iron Hanging Lamps.  
**NEW** pattern Heavy Screw Clamps.  
Strongest in the market.  
For sale by all the principal Hardware dealers.  
Send for Price List.

**MALLEABLE IRON CASTINGS**  
of superior quality and Hardware Specialties  
in Malleable Iron made to order.

**HAMMER & CO.,**  
Branford, Conn.

**HARDWARE DEALERS**

CAN RECOMMEND THE

## CHAMPION METAL WINDOW SASH CHAINS

to their customers as a reliable substitute for  
Sash Cords, very strong and lasting (some in  
daily use ten years), and gives thorough satis-  
faction wherever used. The patented attach-  
ments are very simple and can be applied to  
any window.

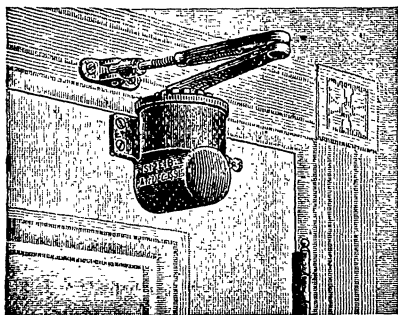
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**"THOMAS MORTON,"**

65 Elizabeth Street,

Write for Prices.

NEW YORK.

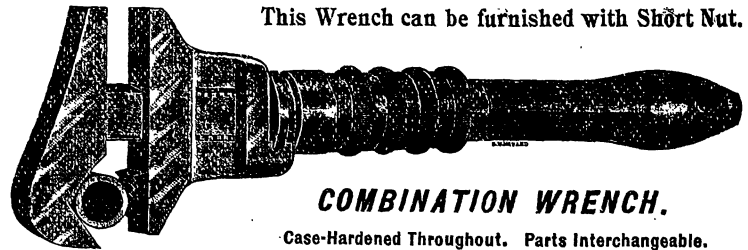


**Bardsley's Liquid Door Check and Spring**

Perfect in action, durable, neat in appearance, low  
in price and fully warranted. Responsible Agents  
wanted in the principal cities.

**J. BARDSLEY, 149 & 151 Baxter St., New York.**

**Handbook of Ornament.** By FRANZ SALES MEYER.  
A grammar of art industrial and architectural, de-  
signing in all its branches, for practical as well as  
theoretical use. Authorized English edition. 580  
pages, illustrated, cloth..... \$3.60  
For Sale by David Williams, 96-102 Reade St., New York.



This Wrench can be furnished with Short Nut.

### COMBINATION WRENCH.

Case-Hardened Throughout. Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the  
requisite combinations of a regular Nut Wrench, thus making a combination which has no equal.  
For Circulars and Price-List, address

**BEMIS & CALL HARDWARE & TOOL CO., Springfield, Mass., U. S. A.**



## TRIMO PIPE WRENCH,

Forged Steel.

All parts interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no  
trouble in close quarters. Does not crush the pipe.

**TRIMO**

**CHAIN  
PIPE  
WRENCH.**



**TRIMO  
BASIN WRENCH.**

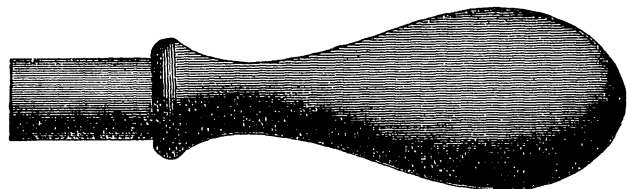
Superior in strength and ease of operation.  
COMPLETE circular grip. Never slips nor crushes.

Can be used with one  
hand and in closer quarters  
than any other Basin  
Wrench. Parts Interchange-  
able.

**TRIMONT MFG. CO., ROXBURY  
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## STEEL MACHINE HANDLE FORGINGS.

Box and Track  
Wrenches.



Keys.

New and Improved Model. Six Sizes. Send for Price-List to

**J. H. WILLIAMS & CO., 9 to 15 RICHARDS ST., BROOKLYN,**

— MAKERS OF —

*Brock's Patent Drop-Forged Chain Pipe Wrench, Engineers' Wrenches, Lathe Dogs, Collars,  
Thumbscrews, and Iron, Steel, Copper and Bronze Drop Forgings of every description.*

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**WYMAN & GORDON, Worcester, Mass.**

## THE BILLINGS PIPE WRENCH



*Faw Drop Forged  
from best Tool Steel  
Few Parts*

*Best Workmanship  
Angle of Jaws the  
same irrespective of  
the size of pipe taken*

Length 14 inches Takes Pipe from 1/4 to 1 1/2 inches

**The Billings & Spencer Co., Hartford, Conn.**

**LORING COES & CO.**

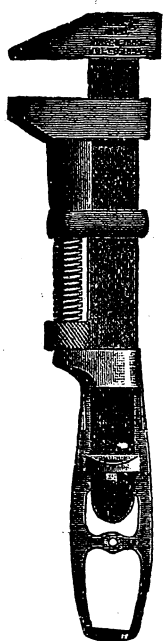
WORCESTER, MASS.

*Manufacturers of MACHINE KNIVES.*

Shear Blades and Strips, Moulding Cutter Plate, Die Stock for Leather, Cloth and Paper Cutting Dies. Lawn Mower and Hay Cutter Knives of every description.

End view of Plated Stock for Dies, Lawn Mower Knives, Blades

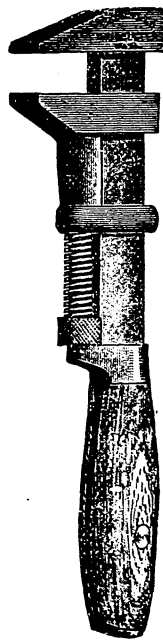
Etc., showing how the Steel is laid.

**L. COES'**

Genuine Improved  
**KNIFE HANDLE  
PATENT**

**Screw  
Wrenches**

MANUFACTURED BY  
**COES WRENCH CO.,**  
WORCESTER, MASS.



Established in  
1839.

Registered  
March 31, 1874.

Patented July  
6, 1880.

Patented July  
8, 1884.

Sectional View Illustrates our New Knife Handle, showing Malleable Iron Frame and Shank of Bar keyed into position.

17" Straight Bar, Extra Long Nut for Screw in Jaw.

The **BEST MADE** and **STRONGEST WRENCH** in the MARKET.

J. C. McCARTY & CO., } New York Agents.  
JOHN H. GRAHAM & CO., }

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FOR ANTHRACITE AND BITUMINOUS MINING

6 DIFFERENT STYLES OF SPOUTS.

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SEAMLESS BRASS COLLAR  
BRASS HINGE  
Lid Solid  
No SOLDERING

THE  
"Columbia"  
Trade-Mark.  
**SOCKET  
FORKS.**

Made in Hay,  
Manure and Spading  
Fork Patterns.

Heavy and long  
Steel Socket.

Most elegant  
goods ever  
made.

The Iowa  
Farming Tool  
Co.,

Sole Makers,  
Ft. Madison,  
Iowa, U. S. A.



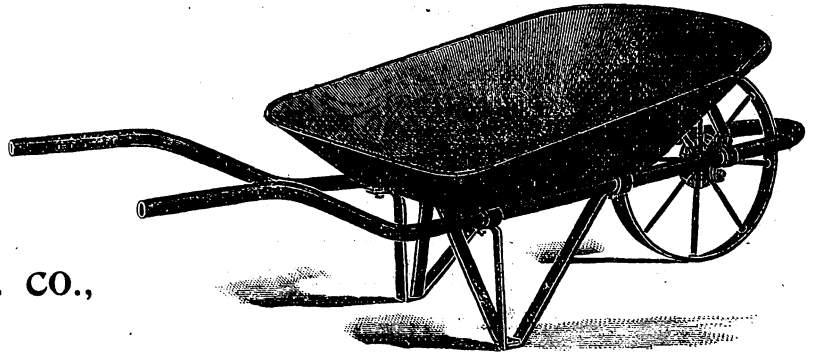
# An Oft Told Tale.

But t'will bear repetition.

We are the largest manufacturers  
of wheelbarrows in the world.

Our stock comprises the  
greatest variety of styles and sizes,

And our productions are of  
the best grade at prices to suit  
the dealer. Write for Cat.



The  
**KILBOURNE & JACOBS MFG. CO.,**  
Columbus, O., U. S. A.

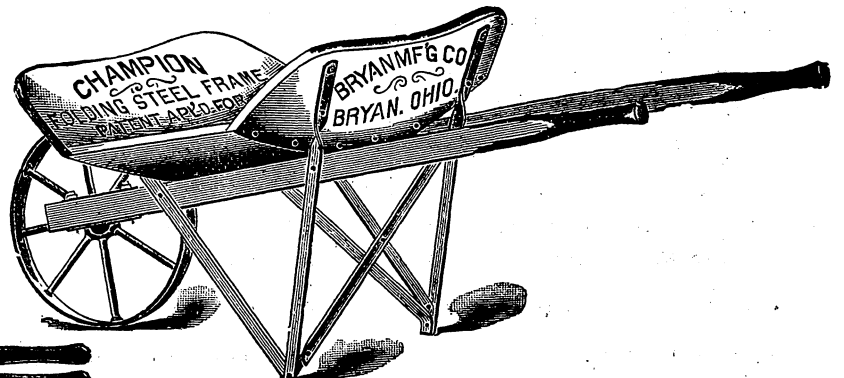
IT  
IS  
ALWAYS  
CHEAPER

## TO HANDLE THE BEST

The market affords than to try to sell cheap, trashy productions. The "Champion Barrow" belongs essentially in the former class and is offered to dealers solely on its merits, while the cost is not greater. For full particulars write

**KNOCKED DOWN**

Occupies Space  
3 inches x 5 inches x 60 inches.

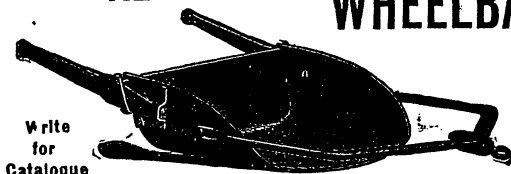


## ALL STEEL WHEELBARROWS & SCRAPERS

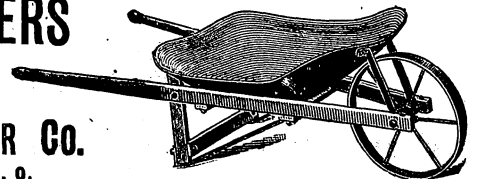
MANUFACTURED BY

**AMERICAN STEEL SCRAPER CO.**

104 Court Street, SIDNEY, O.

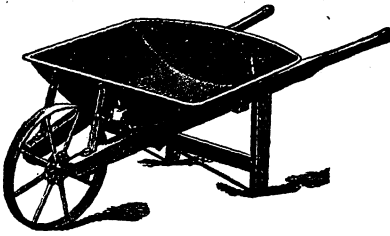


Write  
for  
Catalogue



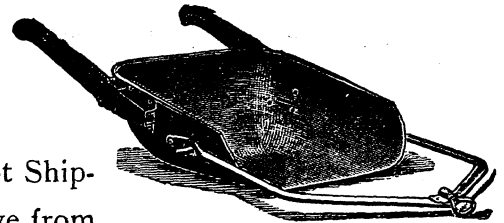
HARD  
PAN

Prices,



High Grade Goods, Prompt Shipments are what you receive from the

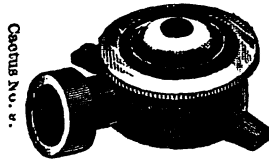
Sidney Steel Scraper Co., 924 Poplar Street, SIDNEY, OHIO.



Japanese No. 12,  
Adjust.

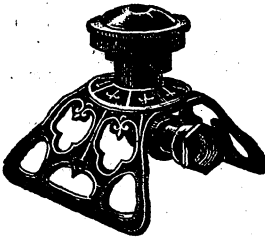
LAWN  
SPRINKLERS.

We manufacture the BEST and CHEAPEST Lawn Sprinklers in the World.



Chinese No. 8.

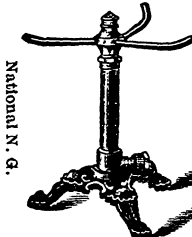
The only Sprinklers which have no revolving parts to leak or wear out.  
The only Sprinklers free from small holes, and which cannot become clogged with gritty substances.  
The only Sprinklers which are adjustable and will give a spray as fine as the mist of Niagara, or as heavy as the area of the supply pipe.  
The best Sprinklers for high pressures, and the only sprinklers which will give satisfaction with low pressures.  
We also manufacture the old style revolving sprinklers, but for our own use would not have them.



Chinese No. 5.

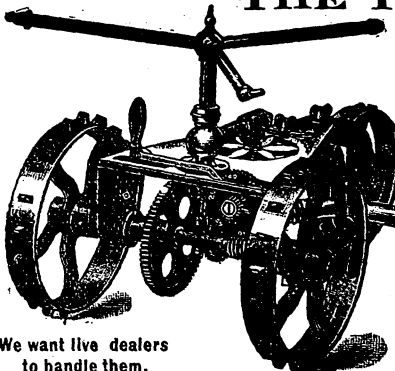
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National N. G.

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THE TEST OF 2 SEASONS

PROVES THE SUCCESS OF THE  
LITTLE GIANT

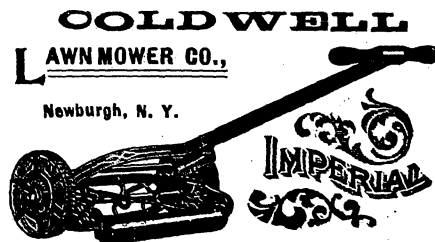
Traveling Lawn Sprinkler.

PATENTED.

Can be set to travel anywhere from 15 to 500 feet per hour, either on a straight line or in a circle, and can be gauged to throw water over a swath 5 to 50 ft. in width.  
Highest Award at World's Columbian Exhibition.

SEND FOR CIRCULAR.

Portland Lawn Sprinkler Co.,  
PORTLAND, ME.



THE BEST MOWER MADE.

The Lightest Running Mower in the World.

This is the only Lawn Mower that stood the test of working the entire season on the Columbian Exposition Grounds without any repairs.

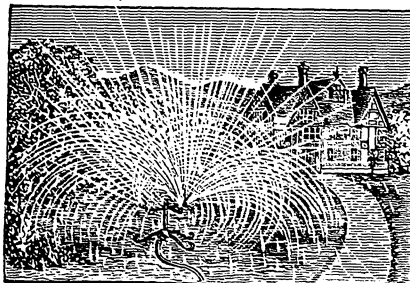


THE STAR  
COIL SPRING SHAFT SUPPORT  
AND ANTI-RATTLER.

Fast selling always gives satisfaction. No weight on horse. Worth twice the cost for convenience in hitching up. Agents wanted. Send stamp for circular. Price, \$1.50. State rights for sale.

THE DECATUR SHAFT SUPPORT CO.  
Decatur, Ill.

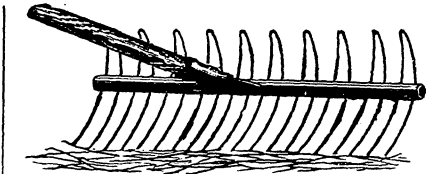
GENUINE  
"CALIFORNIA"  
Lawn Sprinkler.



MANUFACTURED BY  
BLAIR MANUFACTURING CO.  
SPRINGFIELD, MASS.

Write for prices.

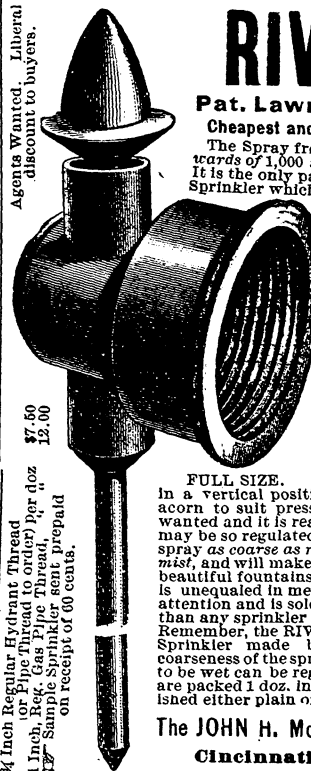
Also makers of the most complete line of Lawn Mowers on the market.



Lead and Others Follow.

We manufacture the ORIGINALS; others follow! But to lead in prices and quality is the success of our Post-hole Diggers, Reversible Lawn-rakes, Spring Curry-combs, Saw-sets, etc.

F. E. KOHLER & CO.,  
CANTON, OHIO.



RIVAL

Pat. Lawn Sprinkler.  
Cheapest and Best in Use.

The Spray from it covers upwards of 1,000 sq. feet of lawn. It is the only patent adjustable Sprinkler which is adaptable to any water pressure. Being made of brass, and having no revolving parts to wear out, or small openings to clog up, it can be operated with sandy or muddy water as well as clear, and will last for years. To operate, screw Sprinkler on end of hose, stick the rod in to the ground.

FULL SIZE.

In a vertical position, adjust the acorn to suit pressure and spray wanted and it is ready for use. It may be so regulated as to throw a spray as coarse as rain or as fine as mist, and will make one of the most beautiful fountains imaginable. It is unequalled in merit, requires no attention and is sold at a less price than any sprinkler in the market. Remember, the RIVAL is the only Sprinkler made by which the coarseness of the spray and the area to be wet can be regulated. They are packed 1 doz. in a box, and finished either plain or nickel plated.

The JOHN H. MCGOWAN CO.  
Cincinnati, Ohio.

Agents Wanted. Liberal discount to buyers.  
\$7.50  
12.00  
1/4 Inch Regular Hydrant Thread (or Pipe Thread) to order per doz  
1 Inch Reg. Gas Pipe Thread, 127 Sample Sprinkler sent prepaid on receipt of 60 cents.

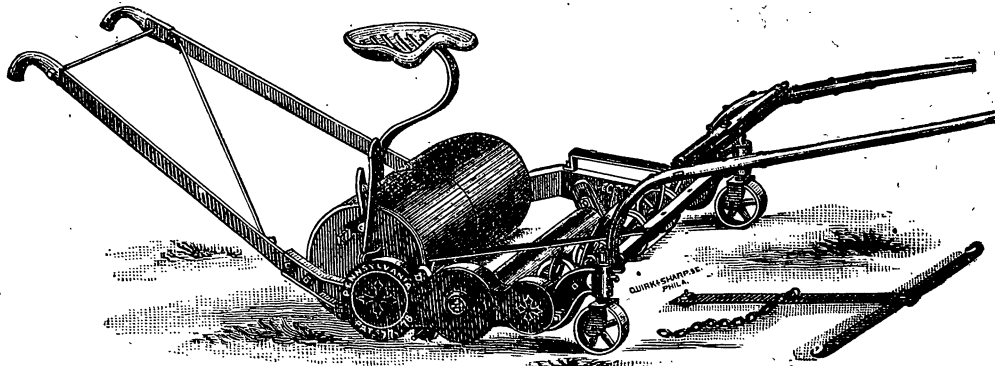


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Windsor Locks Conn

Electric Toy Making, Dynamo Building and Electric-Motor Construction. By T. O'CONOR SLOAN, A.M., E.M., Ph.D. This work treats of the making at home of electrical toys, electrical apparatus, motors, dynamos, and instruments in general and is designed to bring within the reach of young and old the manufacture of genuine and useful electrical appliances. The work is specially designed for amateurs and young folks. Very fully illustrated. \$1.00  
For Sale by David Williams, 96-102 Reade St., N. Y.

# PENNSYLVANIA HORSE LAWN MOWERS.

Made in  
both open  
and solid  
cylinder.



Almost  
noiseless  
in  
operation

Conceded by all who have used them to be the best and most durable Horse Mower on the market.

LIST, OPEN CYLINDER WITH DRAFT IRONS, \$110.00.  
" SOLID " " " 100.00.

PLEASE WRITE FOR DISCOUNTS.

**SUPPLEE HARDWARE CO., - PHILADELPHIA.**

## McGuire's ♦ Diamond.

MANUFACTURED BY

**Dille & McGuire Mfg. Co.,**  
RICHMOND, IND., U. S. A.

### PRICE-LIST.

Wheels, 8 Inches High. Cutter, 5½ Inches Diameter.

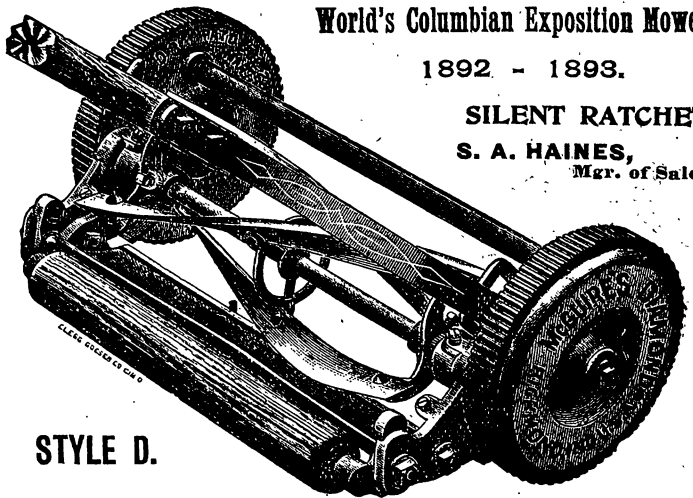
LENGTH.	LIST.	
10 Inch	\$13.00	Discount to the Trade, 70 per cent., F.O.B. Factory.
12 "	14.00	
14 "	15.00	
16 "	16.00	
18 "	17.00	

PHOSPHOR BRONZE JOURNAL BEARINGS. BEST QUALITY STEEL.

This is the Mower contracted for by the Chief of Construction at the Columbian Exposition, was used on the lawns at the World's Fair grounds during the preparatory season of 1892, and being approved by the Landscape Architects, was adopted exclusively for 1893.

If you wish a first-class Mower in all respects, one that is fully warranted,

—BUY MCGUIRE'S DIAMOND.—



STYLE D.

—OFFICIAL—

World's Columbian Exposition Mower.

1892 - 1893.

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Mfr. of Sales.

**Chadborn & Coldwell**  
Mfg. Co.,

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—Sole Manufacturers of—



Send for Illustrated Catalogue.

New Model  
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Excelsior  
LAWN  
MOWERS  
ALSO  
The Rival,  
The O K,  
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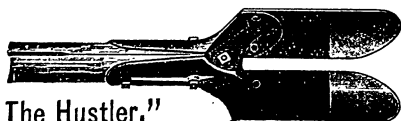
"The Hustler."



By buying the Hustler Lawn Rakes you have the cheapest and best made. All leading jobbers handle them.

GIBBS MFG. CO., Canton, Ohio.

Our line of Post Hole Diggers comprises 5 of the Best Known Styles on the market. Prices low.

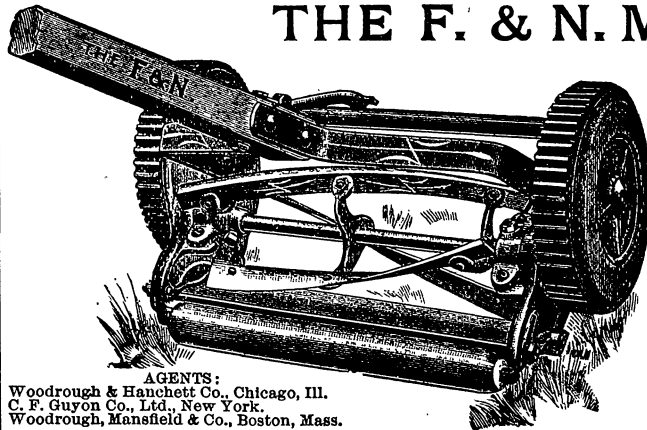


"The Hustler."

## THE F. & N. MFG. CO.,

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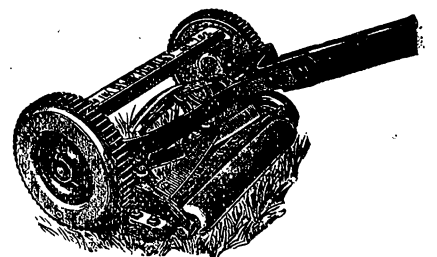
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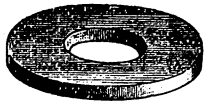


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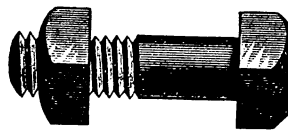
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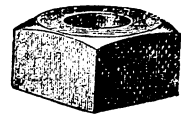
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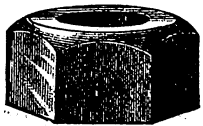
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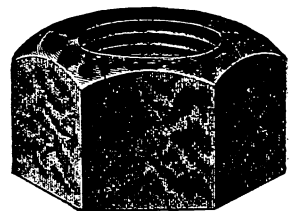
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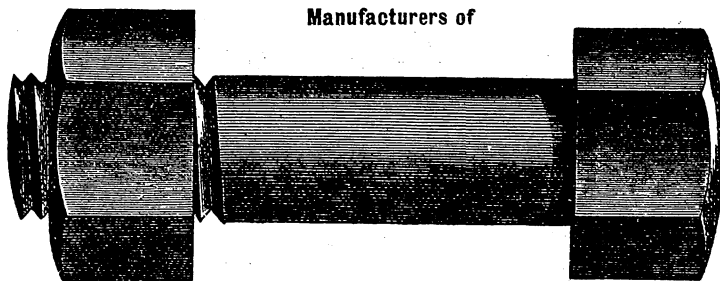
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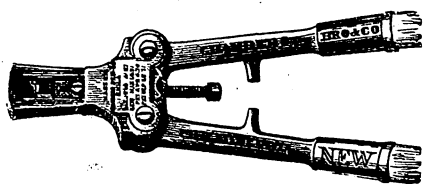
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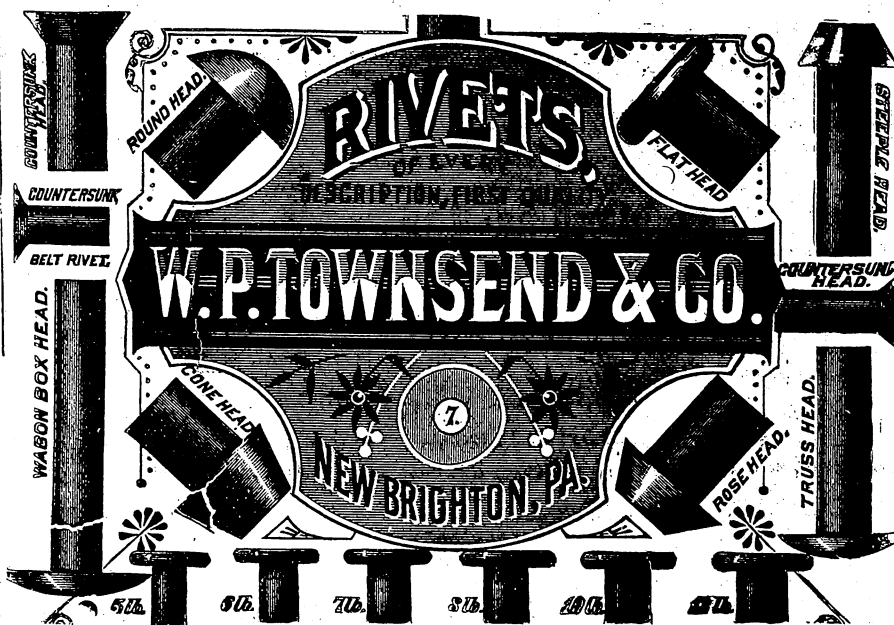
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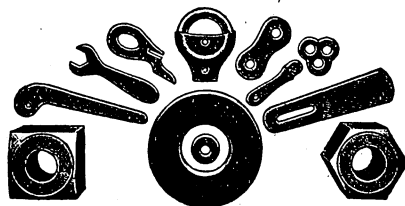
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Link-Belt Engineering Co., Phila., Pa.  
Morse, Williams & Co., Phila., Pa.  
Penna. Elevator Engineering Co., Phila., Pa.
- Emery and Emery Wheels.**  
N. Y. Belting & Packing Co., Ltd., N. Y.  
Northampton Emery Wheel Co., Leeds, Mass.  
Norton Emery Wheel Co., Worcester, Mass.  
Sterling Emery Wheel Co., 174 Fulton St., N. Y.  
Sturtevant Mill Co., Boston, Mass.
- Emery Wheel Dressers.**  
Bay State Stamping Co., Worcester, Mass.
- Engineers and Contractors.**  
Aiken, Henry, Pittsburgh, Pa.  
Artificial Gas Engineering Co., Pittsburgh, Pa.  
Herrick, J. A., 284 Pearl St., N. Y.  
Kennedy, Julian, Pittsburgh, Pa.  
Laughlin, Alex. & Co., Pittsburgh, Pa.  
Lean, D. R., Co., Pittsburgh, Pa.  
McClure, Amsler & Co., Pittsburgh, Pa.  
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.  
Smythe, S. R. Co., Incorporated, Pittsburgh, Pa.  
Swindell, W. & Pittsburgh, Pa.
- Engines, Gas and Gasoline.**  
Buckeye Mfg. Co., Union City, Ind.  
Otto Gas Engine Works, Phila., Pa.  
Rollason Gas Engine, Havemayer Bldg., N. Y.  
Springfield Gas Engine Co., Springfield, Ohio.
- Engines, Steam, Makers of.**  
Bass Foundry & Machine Works, Ft. Wayne, Ind.  
Norwalk Iron Works Co., So. Norwalk, Conn.  
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.  
Phila. Engineering Works, Phila., Pa.  
Southwark Foundry & Machine Co., Phila., Pa.  
Tod, William & Co., Youngstown, O.  
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.  
Wetherill, Robt. & Co., Chester, Pa.
- Exhaust Tumblers.**  
Sweetser, W. A., Brockton, Mass.
- Expansion Bolts.**  
Boone, W. C. Mfg. Co., Boonton, N. J.  
Church, Isaac, Toledo, O.  
Steward & Romaine Mfg. Co., Phila., Pa.
- Exporters.**  
Flint & Co., 68 Broad St., N. Y.
- Faucets, Self-Measuring.**  
Lane Bros., Poughkeepsie, N. Y.
- Faucets, Wooden, Makers of.**  
John Sommer's Son, Newark, N. J.
- Feed-Water Heaters and Purifiers.**  
Davis, I. B. & Son, Hartford, Conn.  
Goubert Mfg. Co., 32 Cortlandt St., N. Y.  
Harrison Safety Boiler Works, Phila., Pa.  
National Pipe Bending Co., New Haven, Conn.  
Taunton Locomotive Mfg. Co., Taunton, Mass.  
Webster, Warren & Co., Camden, N. J.  
Whitlock Coil Pipe Co., Elmwood, Conn.
- Fencing, Iron and Wire.**  
Barnum, E. T., Detroit, Mich.  
Champion Iron Co., Kenton, O.  
Cleveland Fence Co., Indianapolis, Ind.  
Clinton Wire Cloth Co., Clinton, Mass.  
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.  
Kilmer Mfg. Co., Newburgh, N. Y.  
Randall Fence Co., Le Roy, N. Y.  
The Van Dorn Iron Works Co., Cleveland, O.
- Files, Importers of.**  
Moss, F. W., 80 John St., N. Y.
- Files and Rasps, Manufacturers of.**  
Arcade File Works, Anderson, Ind.  
Banker & White, Troy, N. Y.  
Barnett, G. & H., 41 & 43 Richmond, Phila.  
McCauley File Co., Philadelphia.  
Nicholson File Co., Providence, R. I.
- Fire Brick, Makers of.**  
Borgner, Cyrus, Philadelphia, Pa.  
Gardner, Jas. & Son, Cumberland, Md.  
Kreischer, B. & Sons, foot E. Houston St., N. Y.  
Maurer, H. & Son, 420 E. 23d, N. Y.  
Ostrander Fire Brick Co., Troy, N. Y.  
Valentine, M. D. & Bro., Woodbridge.
- Fire Doors.**  
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
- Fishing Tackle.**  
Dane, Stoddard & Kendall, Boston, Mass.
- Flint and Emery Paper.**  
Baeder, Adamson & Co., Phila., Pa.
- Flour Sifters.**  
Bromwell Brush & Wire Goods Co., Cincinnati, Ohio.
- Flue Cleaners.**  
Mackey, Jas. T., St. Louis, Mo.
- Fodder Cutters.**  
Silver Mfg. Co., Salem, O.
- Forges, Portable, &c.**  
Buffalo Forge Co., Buffalo, N. Y.  
Champion Blower & Forge Co., Lancaster, Pa.  
Sturtevant, B. F. Co., Boston, Mass.
- Forgings, Iron and Steel.**  
Bethlehem Iron Co., S. Bethlehem, Pa.  
Cambria Steel-Cambria Iron Co., Johnstown, Pa.  
Frankford Steel Co., Phila., Pa.  
Scranton Forging Co., Scranton, Pa.  
U. S. Projectile Co., Brooklyn, N. Y.
- Forks, Hay and Manure.**  
Iowa Farming Tool Co., Ft. Madison, Iowa
- Foundry Facings.**  
Dixon, Jos., Crucible Co., Jersey City, N. J.  
S. Obermayer Co., Cincinnati, O.  
Smith, J. D. Fdy. Supply Co., Cinn., O.
- Foundry Kiddles.**  
Estey, W. S., 65 Fulton, N. Y.
- Foundry Supplies.**  
Diamond Clamp & Flask Co., Richmond, Ind.  
S. Obermayer Co., Cincinnati, O.  
Rice Mfg. Co., New Durham, N. H.  
Smith, J. D. Fdy. Supply Co., Cinn., O.
- Friction Clutches.**  
Brown, A. & F., 17 Dey St., N. Y.  
Keystone Clutch & Mch. Wks., Phila., Pa.  
Moore & White Co., Philadelphia, Pa.
- Friction Cone.**  
Evans Friction Cone Co., Boston, Mass.
- Galvanized Material.**  
Jersey City Galvanizing Co., 112 John St., N. Y.
- Galvanizing Kettles.**  
Sands, Thos., Nashua, N. H.
- Gas Producers.**  
Wood, R. D. & Co., Philadelphia, Pa.
- Gas & Steam Fitters' Supplies.**  
Pancoast, Henry B. & Co., Phila., Pa.
- Gate Hinges.**  
Wrightsville Hdw. Co., Wrightsville, Pa.
- Gauge, Rolling Mill.**  
Haines Gauge Co., Philadelphia, Pa.
- Gear Cutters.**  
D. E. Whiton Mach. Co., New London, Conn.
- Gears.**  
Boston Gear Works, Boston, Mass.  
Gleason Tool Co., Rochester, N. Y.  
Lincoln Iron Works, Rutland, Vt.  
Poole, Robt. & Son Co., Baltimore, Md.  
U. S. Projectile Co., Brooklyn, N. Y.
- Glass Boards.**  
Lufkin Rule Co., Saginaw, Mich.
- Glass Cutters.**  
Monce, S. G., Bristol, Conn.
- Glue.**  
Baeder, Adamson & Co., Phila., Pa.  
Dodd, A. W. & Co., Gloucester, Mass.  
Russia Cement Co., Gloucester, Mass.
- Grass Catchers.**  
Supplee Hardware Co., Phila., Pa.
- Grinding and Polishing Machines.**  
Norton Emery Wheel Co., Worcester, Mass.
- Grindstone Dressing Machinery.**  
Blake & Johnson, Waterbury, Conn.
- Grindstones.**  
Cleveland Stove Co., Cleveland, O.
- Gunpowder, Makers of.**  
Lafin & Rand Powder Co., 29 Murray St., N. Y.
- Handles.**  
Cleveland Wood Turning Co., Cleveland, O.
- Hangers, Door.**  
Coburn Trolley Track Mfg. Co., Holyoke, Mass.  
Lane Bros., Poughkeepsie, N. Y.
- Hardware Comm'n Merchants.**  
Graham, John H. & Co., 111 Chambers St., New York.  
Jacobus, W. H., 90 Chambers, N. Y.
- Hardware Manufacturers.**  
Stearns, E. C. & Co., Syracuse, N. Y.  
Streeter, N. R. & Co., Groton, N. Y.  
Union Mfg. Co., 103 Chambers, N. Y.  
Yale & Towne Mfg. Co., Stamford Conn.
- Hardware Mfrs' Agents.**  
Bingham, W. Co., Cleveland, O.  
Clarke, Thomas, St. John, N. B.  
Graham, John H. & Co., 113 Chambers, N. Y.  
Sickles, Sweet & Lyon, 35 Barclay, N. Y.
- Hardware Specialties.**  
Acme Shear Co., Bridgeport, Conn.  
Borger Bros., Philadelphia, Pa.  
Bourke Mfg. Co., Youngstown, O.  
Enterprise Mfg. Co., Philadelphia, Pa.  
Ette & Henger Mfg. Co., St. Louis, Mo.  
Haines & Zimmerman, Phila., Pa.  
Johnson, S. C., Racine, Wis.  
New Britain Hdw. Mfg. Co., New Britain, Conn.
- North Bros. Mfg. Co., Philadelphia, Pa.**  
Ransom Hdw. Co., Burlington, Vt.  
Scranton & Co., New Haven, Conn.  
Shepard, Sidney & Co., Buffalo, N. Y.  
Wilson, J. Fred., Worcester, Mass.  
Wrightsville Hdw. Co., Wrightsville, Pa.
- Harness Snaps.**  
Covert Mfg. Co., West Troy, N. Y.  
Coverts' Saddlery Wks., Farmer, N. Y.  
Fitch, W. & E. T., New Haven, Conn.
- Hoisting Machines.**  
Box, Alfred & Co., 314 Green, Phila.  
Brown Hoisting & Conveying Mch. Co., Cleveland, Ohio.  
Fulton Iron & Engine Wks., Detroit, Mich.  
Harrington, E. Son & Co., Phila.  
Lane Bros., Poughkeepsie, N. Y.  
Lidgerwood Mfg. Co., 96 Liberty, N. Y.  
Lincoln Iron Works, Rutland, Vt.  
McCoy, Jos. F. & Co., 26 Warren St.  
Maris & Beekley, Philadelphia.  
Morse Mfg. & Fdy. Co., Milwaukee, Wis.  
Morse, Williams & Co., Phila.  
Sellers, Wm. & Co., Phila. and N. Y.  
Spindel, J. G., Reading, Pa.  
Yale & Towne Mfg. Co., Stamford, Ct.
- Hollow Ware.**  
Avery Stamping Co., Cleveland, O.  
Bronson Supply Co., Cleveland, Ohio.  
Cleveland Stamping & Tool Co., Cleveland, O.
- Hollow Ware, Aluminum.**  
Wohler Aluminum Co., Chicago, Ill.
- Horse Nails, Makers of.**  
Capwell Horse Nail Co., Hartford, Conn.  
National Horse Nail Co., Vergennes, Vt.  
Putnam Nail Co., Neponset, Boston, Mass.
- Horse and Mule Shoes, Makers of.**  
Bryden Horse Shoe Co., Catsaugua, Pa.  
Burden Iron Co., Troy, N. Y.  
Crescent Horse Shoe & Iron Co., Max Meadows, Va.  
Diamond State Iron Co., Wilmington, Del.  
Old Dominion Iron & Nail Works Co., Richmond, Va.  
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.  
Rhode Island Perkins Horse Shoe Co., Providence.  
Shoenberger & Co., Pittsburgh, Pa.  
Standard Horse Shoe Co., Boston, Mass.
- Hose Menders.**  
Hudson, C. E. & Co., Leominster, Mass.
- Hose.**  
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.
- Hydrants, &c.**  
McLean, John, 296 & 298 Monroe, N. Y.
- Hydraulic Forging.**  
U. S. Projectile Co., Brooklyn, N. Y.
- Hydraulic Jacks.**  
Dudgeon, Richard, 24 Columbia, N. Y.  
McCoy, Jos. F. Co., 26 Warren St., N. Y.
- Ice Cream Freezers.**  
North Bros. Mfg. Co., Phila., Pa.  
Packer, C. W., Philadelphia, Pa.  
White Mountain Freezer Co., Nashua, N. H.
- Injectors.**  
Eynon-Evans Mfg. Co., Philadelphia, Pa.  
Jenkins Bros., New York.
- Insurance, Boiler.**  
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.
- Iron and Steel, Swedish.**  
Lundberg, Gustaf, Boston, Mass.  
Milne, A. & Co., 1 Broadway, N. Y.
- Iron Commission Brokers.**  
Butze, Adolph, St. Louis, Mo.  
Corning, Edw. & Co., 29 B'way, N. Y.  
Cotton, Barclay W. & Co., Phila.  
Etting, Edw. J., Philadelphia.  
Hogan, John L. & Co., Philadelphia, Pa.  
Hoffman, J. W. & Co., Philadelphia.  
Levis, Henry & Co., Philadelphia.  
Keeley, Jerome & Co., Philadelphia.  
Lea, J. Tatnall & Co., Philadelphia.  
Mohr, J. J., 430 Walnut, Philadelphia.  
Pilling & Crane, Philadelphia, Pa.  
Wister, L. R. & Co., Phila., Pa.
- Iron Ore.**  
Samuel, Frank, Philadelphia, Pa.
- Iron, Merchants.**  
Barns, C. K. & Co., Philadelphia, Pa.  
Borden & Lovell, 70 West, N. Y.  
Bussenden & Cunliffe, Philadelphia.  
Corning, Edw. & Co., 29 B'way, N. Y.  
Cox, Justice, Jr., Philadelphia.  
Cotton, Barclay W. & Co., Phila.  
Hoffman, J. W. & Co., Philadelphia.  
Leonard, J., 446 West St., N. Y.  
Nicolls, Wheeler & Co., Philadelphia.  
Ogden & Wallace, 677 to 683 Greenwich St., N. Y.  
Pierson & Co., 29 Broadway, N. Y.  
Thomson, W. H. & Co., Phila., Pa.  
Wallace, Wm. H. & Co., 90 B'way, N. Y.  
Whitney, A. R. & Co., 17 B'way, N. Y.  
Wilson, E. H. & Co., Philadelphia.
- Iron, Importers.**  
Abbott, Wheelock & Co., N. Y. and Boston.  
Lundberg, Gustaf, Boston, Mass.
- Iron, Sheet, Manufacturers of.**  
Cambridge Iron & Steel Co., Cambridge, Ohio.  
W. Dewees Wood Co., Ltd., McKeesport, Pa.
- Ironwork, Ornamental.**  
Barnum, E. T., Detroit, Mich.  
Champion Iron Co., Kenton, O.  
Ludlow-Saylor Wks. Co., St. Louis, Mo.  
The Van Dorn Iron Works Co., Cleveland, O.
- Keys.**  
Wollensak, J. F., Chicago, Ill.
- Knife and Tool Grinders.**  
Tracy, A. J. Co., Ltd., 18 Cliff St., N. Y.
- Ladies.**  
Detroit Fdy. Equipment Co., Detroit, Mich.
- Lanterns.**  
Rochester Lamp Co., 42 Park Place, New York.  
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Lathes.**  
Dietz, Schumacher & Co., Cincinnati, O.  
Draper Machine Tool Co., Worcester, Mass.  
Harrington, E. Son & Co., Phila., Pa.  
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.  
New Haven Mfg. Co., New Haven, Conn.  
Sebastian Machine Co., Cincinnati, O.  
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Lathing, Wire.**  
Clinton Wire Cloth Co., Clinton, Mass.  
N. J. Wire Cloth Co., Trenton, N. J.  
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Laundry Machines.**  
Johnson, S. C., Racine, Wis.
- Lawn Mowers.**  
Blair Mfg. Co., Springfield, Mass.  
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.  
Coldwell Lawn Mower Co., Newburg, N. Y.  
Dille & McGuire Mfg. Co., Richmond, Ind.  
Enterprise Mfg. Co., Philadelphia, Pa.  
F. & N. Mfg. Co., Richmond, Ind.  
Henley, M. C., Richmond, Ind.  
Supplee Hdw. Co., Phila., Pa.
- Lawn Rakes.**  
Gibbs Mfg. Co., Canton, Ohio.  
Kohler, F. E. & Co., Canton, O.
- Lawn Sprinklers.**  
Blair Mfg. Co., Springfield, Mass.  
Enterprise Mfg. Co., Phila., Pa.  
Ette & Henger Mfg. Co., St. Louis, Mo.  
Gibbs Mfg. Co., Canton, Ohio.  
Graham, John H. & Co., 113 Chambers St., N. Y.  
McGowan, John H. Co., Cincinnati, O.  
Portland Lawn Sprinkler Co., Portland, Me.
- Lemon Squeezers.**  
Ripley Mfg. Co., Unionville, Conn.
- Letters and Figures, Metallic.**  
White, A. A. & Co., Providence, R. I.
- Letters, Paper.**  
Tablet & Ticket Co., Chicago, Ill.
- Levels.**  
Richardson, C. F. & Son, Athol, Mass.
- Locks and Knobs, Manufacturers of.**  
Deitz, A. E., 97 Chambers, N. Y.  
Independent Electric Co., Chicago, Ill.  
Reading Hdw. Co., Reading, Pa.  
Smith & Egge Mfg. Co., Bridgeport, Conn.  
Yale & Towne Mfg. Co., Stamford, Conn.
- Lubricants.**  
Dixon, Jos., Crucible Co., Jersey City, N. J.
- Machinery.**  
Am. Tool Works, Cleveland, Ohio.  
Ayer, H. C. & Glendon Co., Phila., Pa.  
Barnes, W. F. & John, Rockford, Ill.  
Bement, Miles & Co., Philadelphia, Pa.  
Bigelow, C. E., 45 De, N. Y.  
Bisnall & Keeler Mfg. Co., St. Louis.  
Bliss, E. W. Co., Brooklyn, N. Y.  
Bridgeport Mch. Tool Co., Bridgeport, Conn.  
Briggs, Marvin, 12 Broadway, N. Y.  
Carlin's Sons, Thos., Allegheny, Pa.  
Clapp, Geo. M., agt., 74 Cortlandt, N. Y.  
Detrick & Harvey Mch. Co., Baltimore, Md.  
Dietz, Schumacher & Co., Cincinnati, Ohio.  
Fitchburg Mch. Works, Fitchburg, Mass.  
Garvin Mch. Co., Lighthouse & Canal Sts.  
Gould & Eberhardt, Newark, N. J.  
Hamilton Mch. Tool Co., Hamilton, O.  
Harrington, E. Son & Co., Phila., Pa.  
Henderer, A. I., Wilmington, Del.  
Hendey Machine Co., Torrington, Ct.  
Hill, Clarke & Co., Boston, Mass.  
Howard & Morse, 45 Fulton St., N. Y.  
Hulbert-Rogers Mch. Co., South Sudbury, Mass.  
Johnson, Israel H., Jr., & Co., Phila.  
Jones & Lamson Mch. Co., Springfield, Vt.  
Lodge & Davis Mch. Tool Co., Cincinnati, O.  
Lodge & Shipley Mch. Tool Co., Cincinnati, O.  
Lovegrove & Co., Philadelphia, Pa.  
McCabe, J. J., 68 Cortlandt, N. Y.  
Machinery's Supply Co., Rochester, N. Y.  
Manville, E. J., Mch. Co., Waterbury, Conn.  
Newark Mch. Tool Wks., Newark, N. J.  
New Haven Mfg. Co., New Haven, Ct.  
New York Machinery Depot, 178 Broadway, New York.  
Niles Tool Wks., 138 Liberty St., N. Y.  
Pittsburgh Mfg. Co., Pittsburgh, Pa.

- Place, Geo.**, 145 Broadway, N. Y.  
**Poole, Robt. & Son Co.**, Baltimore, Md.  
**Powell Planer Co.**, Worcester, Mass.  
**Pratt & Whitney Co.**, Hartford, Conn.  
**Prentiss Tool & Supply Co.**, N. Y.  
**Scranton Supply & Mchry. Co.**, Scranton, Pa.  
**Sellers, Wm. & Co.**, Phila.  
**Seyfer's Sons, L. F.**, Philadelphia, Pa.  
**Signoury Tool Co.**, Hartford, Conn.  
**Steppe, J. & Co.**, Cincinnati, O.  
**Stow Flexible Shaft Co., Ltd.**, Phila.  
**Toomey, Frank**, Philadelphia, Pa.  
**Walker Mfg. Co.**, Cleveland, O.  
**Wetherill, Robert & Co.**, Chester, Pa.  
**Wickes Bros.**, Saginaw, Mich.  
**Wilson, W. A.**, Rochester, N. Y.
- Machinery for Hardware Manufacturers.**  
 Adt. Jno. & Son, New Haven, Conn.
- Machine Knives.**  
 Loring, Coes & Co., Worcester, Mass.  
 Simonds Mfg. Co., Fitchburg, Mass.  
 New Britain Hdw. Mfg. Co., New Britain, Conn.
- Machine Screws.**  
 New Britain Hdw. Mfg. Co., New Britain, Conn.
- Machine Tools.—See Machinery.**
- Machine Work.**  
 Papping, J., 58th St. & 11th Ave., N. Y. City.
- Machinists' Scales**  
 Coffin & Leighton, Syracuse, N. Y.  
 Starrett, L. S., Athol, Mass.
- Machinists' Tools and Supplies.**  
 King, J. M. & Co., Waterford, N. Y.  
 Sellers, Wm. & Co., Inc., Phila.
- Mangles.**  
 Johnson, S. C., Racine, Wis.
- Manufacturing Sites.**  
 Illinois Central R. R., Chicago, Ill.
- Measuring Tapes.**  
 Keuffel & Esser Co., N. Y.  
 Lufkin Rule Co., Saginaw, Mich.
- Meat Choppers.**  
 Claus Shear Co., Fremont, Ohio.
- Mechanical Instruction.**  
 Correspondence School of Mechanics, Scranton, Pa.
- Metals.**  
 Fearing, Wm. S., 100 Chambers, N. Y.  
 Hendricks Bros., 49 Cliff, N. Y.
- Metal Brokers.**  
 American Metal Co., N. Y.
- Metalurgists.**  
 Britton, J. Blodgett, Phila., Pa.
- Mining Knives.**  
 Palmer Hdw. Mfg. Co., Troy, N. Y.
- Mine Lamps.**  
 Darby, Edw. & Sons, Phila., Pa.  
 Leonard, B. E., Scranton, Pa.
- Mining Screens.**  
 Harrington & King Perforating Co., Chicago, Ill.  
 Howard & Morse, 45 Fulton, N. Y.
- Models, Makers of.**  
 Franklin, H. H. Mfg. Co., Syracuse, N. Y.  
 Ideal Machine Works, Hartford, Conn.
- Molding Sand.**  
 Obermayer, S. Co., Cincinnati, O.
- Money Drawers.**  
 Columbian Novelty Co., North East, Penna.
- Motors, Water and Electric.**  
 Bolgiano Mfg. Co., Baltimore, Md.  
 C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.  
 Dallett, Thomas H. & Co., Phila., Pa.
- Nail Machinery.**  
 Pittsburgh Mfg. Co., Pittsburgh, Pa.
- Nail and Tack Pullers.**  
 Scranton & Co., New Haven, Conn.  
 Specialty Mfg. Co., Hartford, Conn.
- Nails (Cut) and Spikes.**  
 Borden & Lovell, 70 West, N. Y.  
 Cumberland Nail & Iron Co., Phila.  
 Pottstown Iron Co., Pottstown, Pa.  
 Riverside Iron Wks., Wheeling, W. Va.
- Nickel Plating.**  
 Rhodes, L. E. Co., Hartford, Conn.
- Norway Shapes, Rollers of.**  
 Rowland, William & Harvey, Frankford, Philadelphia.
- Novelty Manufacturers.**  
 Franklin, H. H. Mfg., Syracuse, N. Y.  
 Ideal Machine Works, Hartford, Conn.
- Nut Machines.**  
 Dunham Nut Co., Unionville, Ct.
- Nuts, Bolts, &c., Makers of.**  
 American Bolt Co., Lowell, Mass.  
 American Screw Co., Providence, R. I.  
 Blake & Johnson, Waterbury, Conn.  
 Dunham Nut Co., Unionville, Conn.  
 Haskell, Wm. H. Co., Pawtucket, R. I.  
 Mt. Carmel Bolt Co., Mt. Carmel, Conn.  
 Pennsylvania Bolt & Nut Co., Lebanon, Pa.  
 Port Chester Bolt & Nut Co., Port Chester, N. Y.  
 Russell, Bessall & Ward, Port Chester, N. Y.  
 Sternbergh, J. H. & Son, Reading, Pa.  
 Wilson, J. Fred., Worcester, Mass.  
 Wm. H. Haskell Co., Pawtucket, R. I.
- Oilers.**  
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Oil Stones.**  
 Pike Mfg. Co., Pike Station, N. H.
- Ores.**  
 Wister, Francis, Philadelphia, Pa.
- Ox Shoes.**  
 Scranton Forging Co., Scranton, Pa.
- Packing.**  
 Morrison, Robert, St. Louis, Mo.  
 N. Y. Belting & Packing Co., Ltd., N. Y.
- Padlocks.**  
 Ames Sword Co., Chicopee, Mass.  
 Fraim, E. T., Lancaster, Pa.  
 Independent Electric Co., Chicago, Ill.  
 Shultz Mfg. Co., Phila., Pa.  
 Wolf, W. & L., Phila., Pa.
- Paint Burners.**  
 Dangler Stove & Mfg. Co., Cleveland, Ohio.
- Paint Cans.**  
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Pants Stretcher.**  
 Covert Mfg. Co., West Troy, N. Y.
- Patent Solicitors.**  
 Butler, C. N., Phila., Pa.  
 Jenner, H. W. T., Washington, D. C.  
 Howson & Howson, Philadelphia and Washington.  
 Stocking, E. B., Washington, D. C.
- Pattern Letters.**  
 Wells, Heber, 157 William St., N. Y.
- Perforated Metal.**  
 Clinton Wire Cloth Co., Clinton, Mass.  
 Harrington & King Perforating Co., Chicago, Ill.  
 Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Phosphor Bronze.**  
 Phosphor Bronze Smelting Co., Limited, Philadelphia.
- Phosphor Tin.**  
 Crescent Phosphorized Metal Co., Philadelphia, Pa.  
 Halk & Naumann, 516 Pearl, N. Y.
- Picks and Mattocks.**  
 Plumb, Fayette R., Philadelphia, Pa.
- Pig Iron.**  
 Houston, C. B. & Co., Philadelphia, Pa.  
 Montour Iron & Steel Co., Danville, Pa.  
 Naylor & Co., 45 Wall, N. Y.  
 Pilling & Crane, Philadelphia, Pa.  
 Samuel, Frank, Philadelphia, Pa.
- Pig Iron Storage.**  
 Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.
- Pile Drivers.**  
 Vulcan Iron Works, Chicago, Ill.
- Pipe, Bent.**  
 National Pipe Bending Co., New Haven, Conn.
- Pipe Cutting and Threading Machines.**  
 Armstrong Mfg. Co., Bridgeport, Conn.  
 Bignall & Keeler Mfg. Co., St. Louis, Mo.  
 Detrick & Harvey Mch. Co., Baltimore, Md.  
 Merrill Mfg. Co., Toledo, O.  
 Pancoast, Henry B. & Co., Phila.  
 Saunders Sons, D., Yonkers, N. Y.  
 Walworth Mfg. Co., Boston, Mass.
- Pipe Grips.**  
 Prentiss Vise Co., 44 Barclay, N. Y.
- Pipes, Fittings, &c., Makers of.**  
 McNab & Harlin Mfg. Co., N. Y.
- Pipe, Water and Gas, Makers of.**  
 Cumberland Nail & Iron Co., Phila., Pa.  
 Donaldson Iron Co., Emaus, Pa.  
 Riverside Iron Works, Wheeling, W. Va.  
 Wood, R. D. & Co., Philadelphia, Pa.
- Plane Irons, Manufacturers of.**  
 Buck Bros., Millbury, Mass.  
 Buck, Chas., Millbury, Mass.
- Planers.**  
 Detrick & Harvey Mch. Co., Baltimore, Md.  
 New Haven Mfg. Co., New Haven, Conn.  
 Powell Planer Co., Worcester, Mass.  
 Wilson, W. A., Worcester, Mass.
- Planes, Manufacturers of.**  
 Stanley Rule & Level Co., N. Y.
- Plated Ware.**  
 Boardman, L. & Son, New Haddam, Ct.  
 Holmes & Edwards Silver Co., Bridgeport, Conn.  
 Rogers, Wm. Mfg. Co., Hartford, Ct.
- Plate, Iron and Steel, Mfrs. of.**  
 Aetna-Standard Iron & Steel Co., Bridgeport, O.  
 Lukens Iron & Steel Co., Coatesville, Pa.  
 Mahoning Valley Iron Co., Youngstown, Ohio.  
 Moorhead-McLean Co., Pittsburgh, Pa.  
 McIlvain & Sons, Reading, Pa.  
 Pottstown Iron Co., Pottstown, Pa.  
 Pottsville Iron & Steel Co., Pottsville, Pa.  
 Singer, Nimick & Co., Pittsburgh, Pa.  
 The Mahoning Valley Iron Co., Youngstown, O.  
 Wood, Alan Co., Philadelphia.
- Plating, Nickel, Brass and Silver.**  
 Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Polishing Machines.**  
 Watson & Stillman, 204 E. 43d, N. Y.
- Post Hole Diggers.**  
 Gibbs Mfg. Co., Canton, Ohio.  
 Kohler, F. E. & Co., Canton, O.
- Poultry Nettings.**  
 Barnum, E. T., Detroit, Mich.  
 Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.  
 N. J. Wire Cloth Co., Trenton, N. J.  
 N. Y. Silver Finish.  
 Tyler Wire Works Co., W. S., Cleveland, O.  
 Wright & Colton Wire Cloth Co., Worcester, Mass.
- Powder.**  
 Ladin & Rand Powder Co., 29 Murray, New York Powder Co., 62 Liberty St., N. Y.
- Power Hack Saws.**  
 Millers Falls Co., 93 Reade St., N. Y.
- Power Hammers.**  
 Diener & Elshardt, Philadelphia.  
 Dupont Mfg. Co., St. Johnsburg, Vt.  
 Jenkins & Lingle, Bellefonte, Pa.  
 Long & Allstatter Co., Hamilton, Ohio.  
 Scranton & Co., New Haven, Conn.
- Power Transmitting Machinery.**  
 Dodge Mfg. Co., Mishawaka, Ind.
- Presses, Dies, &c.**  
 E. W. Bliss Co., Brooklyn, N. Y.  
 Crosby, G. A. & Co., Chicago, Ill.  
 Stark Mch. & Tool Co., Buffalo, N. Y.  
 Stiles & Parker Press Co., Brooklyn, N. Y.  
 Waterbury Mch. Co., Waterbury, Ct.
- Presses, Power, Makers of.**  
 Bliss, E. W. Co., Brooklyn, N. Y.  
 Manville, E. J. Mch. Co., Waterbury, Ct.  
 Curtis Mfg. Co., Meriden, Conn.  
 Stark Mch. & Tool Co., Buffalo, N. Y.  
 Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
- Printers.**  
 Griffith, Axtell & Cady Co., Holyoke, Mass.
- Pulleys.**  
 Brown, A. & F., 17 Day St., N. Y.  
 Dodge Mfg. Co., Mishawaka, Ind.  
 Keystone Clutch Mch. Wks., Phila., Pa.  
 Lake, J. H. & D. Co., Massillon, O.
- Pulverizing Mills.**  
 Bradley Fertilizer Co., Boston, Mass.
- Pumping Machinery.**  
 Dean Bros. Steam Pump Works, Indianapolis, Ind.  
 Curtis Mfg. Co., Seneca Falls, N. Y.  
 Hooker-Collville Steam Pump Co., St. Louis, Mo.  
 McGowan, J. H. & Co., Cincinnati, O.  
 Maslin, J. & Son, Jersey City, N. J.  
 Norwalk Iron Works Co., So. Norwalk, Conn.  
 Seaboard Fdy. & Mch. Co., Phila., Pa.  
 Valley Pump Works, Easthampton, Mass.  
 Worthington, Henry R., 86 and 88 Liberty St., N. Y.
- Pumps, Makers of.**  
 Bellevue Pump Co., Bellevue, Iowa.  
 Deming Co., Salem, O.  
 Douglas W. & B., Middletown, Conn.  
 Goulds Mfg. Co., Seneca Falls, N. Y.  
 Myers, F. E. & Bro., Ashland, O.
- Punches.**  
 Long & Allstatter Co., Hamilton, Ohio.  
 Richards, I. P., Providence, R. I.
- Punches and Shears, Hand and Power.**  
 E. W. Bliss Co., Brooklyn, N. Y.  
 Crosby, G. A. & Co., Chicago, Ill.  
 Henderer, A. L., Wilmington, Del.  
 Stark Mch. & Tool Co., Buffalo, N. Y.  
 Stiles & Parker Press Co., Brooklyn, N. Y.  
 Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.  
 Watson & Stillman, 204 E. 43d, N. Y.
- Rails, Old and New.**  
 Perry, W. H. & Co., Providence, R. I.
- Rat and Mouse Traps.**  
 Estey, W. S., 65 Fulton, N. Y.  
 Ripley Mfg. Co., Unionville, Conn.
- Razor Guard.**  
 Murphy, P. D., Lockport, N. Y.
- Razors, Manufacturers of.**  
 Torrey, J. R. Razor Co., Worcester, Mass.
- Reels.**  
 Hendryx, A. B. Co., New Haven, Conn.
- Refrigerator Door Fasteners.**  
 Conroy, P. J. & Co., Philadelphia.
- Rivets.**  
 Blake & Johnson, Waterbury, Conn.  
 Boyce Rivet Co., Muncie, Ind.  
 Burden Iron Co., Troy, N. Y.  
 Clark & Cowles, Plainville, Conn.  
 Cobb & Drew, Plymouth, Mass.  
 Sternbergh, J. H. & Son, Reading, Pa.  
 Townsend, W. P. & Co., New Brighton, Pa.
- Riveting Machines.**  
 Adt. Jno. & Sons, New Haven, Conn.
- Rolling Mill Machinery.**  
 Birmingham Iron Fdry, Birmingham, Conn.  
 Booth, The Lloyd Co., Youngstown, O.  
 Leeburg Foundry & Mch. Co., Pittsburgh, Pa.  
 Morgan Construction Co., Worcester, Mass.  
 Robinson-Rea Mfg. Co., Pittsburgh.  
 Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.  
 Trethewey Mfg. Co., Pittsburgh, Pa.  
 Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
- Rolls, Chilled, Sand and Steel.**  
 Birmingham Iron Foundry, Birmingham, Conn.  
 Booth, The Lloyd Co., Youngstown, O.  
 East Chicago Fdry Co., Chicago, Ill.  
 Garrison, A. Fdry. Co., Pittsburgh, Pa.  
 Robinson-Rea Mfg. Co., Pittsburgh, Pa.  
 Seaman, Sleeth & Black, Pittsburgh.  
 Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
- Roofing.**  
 Cambridge Roofing Co., Cambridge, O.  
 Cincinnati Corrugating Co., Piqua, O.  
 Kanneberg Roofing Co., Canton, O.  
 N. Y. Iron Roofing & Corrugating Co., Jersey City, N. J.
- Rope and Web Goods.**  
 Covert Mfg. Co., West Troy, N. Y.  
 Covert's Saddlery Wks., Farmer, N. Y.
- Rope Wheels.**  
 Cresson, Geo. V. Co., Philadelphia, Pa.
- Rubber Goods.**  
 Canfield, H. O., Bridgeport, Conn.
- Rules, Manufacturers of.**  
 Keuffel & Esser Co., New York.  
 Lufkin Rule Co., Saginaw, Mich.  
 Stanley Rule & Level Co., 29 Chambers, N. Y.
- Rust Preventive.**  
 Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
- Sad Irons.**  
 Streeter, N. R. & Co., Groton, N. Y.
- Sad Irons, Gas.**  
 Bolgiano Mfg. Co., Baltimore, Md.
- Sand Paper.**  
 Baeder, Adamson & Co., Phila., Pa.
- Sash Balances.**  
 Caldwell Mfg. Co., Rochester, N. Y.  
 Fullman Sash Balance Co., Rochester, N. Y.  
 Stearns, E. C. & Co., Syracuse, N. Y.
- Sash Cords and Chains.**  
 Morton, Thos., 65 Elizabeth, N. Y.  
 Ossawan Mills Co., Norwich, Conn.  
 Samson Cordage Works, Boston, Mass.  
 Smith & Egge Mfg. Co., Bridgeport.
- Sash Pulleys.**  
 Palmer Hardware Mfg. Co., Troy, N. Y.
- Sash Weights.**  
 Brown, E. E. & Co., Philadelphia, Pa.  
 Norton Bros., Chicago, Ill.
- Saw Filing Machines.**  
 Disston, Henry & Sons, Philadelphia, Pa.
- Saws, Makers of.**  
 Disston, Henry & Sons, Phila., Pa.  
 National Saw Co., 96 Reade St., N. Y.  
 Simonds Mfg. Co., Fitchburg, Mass.
- Saw Vises.**  
 Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Saw Sets.**  
 Taintor Mfg. Co., 84-86 Chambers, N. Y.
- Scales, Manufacturers of.**  
 Buffalo Scale Co., Buffalo, N. Y.  
 Chatillon, John & Sons, 85-89 Cliff, N. Y.
- Scrapers, Road.**  
 Am. Steel Scraper Co., Sydney, Ohio.  
 Kilbourne & Jacobs Mfg. Co., Columbus, O.  
 Sidney Steel Scraper Co., Sidney, O.
- Screen Door Braces.**  
 Clark, W. J. & Co., Salem, O.
- Screens, Coal and Ore.**  
 Hendrick Mfg. Co., Ltd., Carbondale, Pa.
- Screens, Door and Window.**  
 White, Van Glahn & Co., 15-17 Chatham Sq., N. Y.
- Screw Cutting Machinery.**  
 Wells Bros. & Co., Greenfield, Mass.  
 Wiley & Russell Mfg. Co., Greenfield, Mass.
- Screw Drivers.**  
 Brown, R. H. & Co., New Haven, Conn.  
 Mayhew, H. C., Shelburne Falls, Mass.
- Screw Plate and Pipe Cutter.**  
 Jarecki Mfg. Co., Erie, Pa.
- Screws, Makers of.**  
 American Screw Co., Providence, R. I.  
 Blake & Johnson, Waterbury, Conn.  
 Wm. H. Haskell Co., Pawtucket, Mass.  
 Miles, F. S., 205 Quarry, Philadelphia.  
 Reynolds & Co., New Haven, Conn.  
 Worcester Machine Screw Co., Worcester, Mass.
- Scroll Saws.**  
 Barnes, W. F. & John, Rockford, Ill.  
 Seneca Falls Mfg. Co., Seneca Falls, N. Y.
- Scythe Stones and Whetstones.**  
 Pike Mfg. Co., Pike Station, N. H.  
 Cleveland Stone Co., Cleveland, O.
- Shaft Coupling.**  
 Columbian Novelty Co., North East, Penna.
- Shafting, Makers of.**  
 Brown, A. & F., 17 Day St., N. Y.  
 Cresson, Geo. V. Co., Philadelphia, Pa.  
 Fairmount Mch. Co., Philadelphia, Pa.  
 Sellers, Wm. & Co., Inc., Phila., Pa.  
 Stow Mfg. Co., Binghamton, N. Y.
- Shaft Support.**  
 Decatur Shaft Support Co., Decatur, Ill.
- Shaped Iron and Steel, Manufacturers of.**  
 Aetna-Standard Iron & Steel Co., Bridgeport, O.  
 East Chicago Fdry Co., Chicago, Ill.



Allentown Rolling Mill, Allentown, Pa.  
Lockhart Iron & Steel Co., Pittsburgh, Pa.  
Passaic Rolling Mill Co., Paterson, N.J.  
Pottsville Iron & Steel Co., Pottsville, Pa.  
Roberts, A. & P. & Co., Phila., Pa.  
The Phoenix Iron Co., Phila., Pa.  
Tudor Iron Works, St. Louis, Mo.

#### Shears and Scissors.

Acme Shear Co., Bridgeport, Conn.  
Heinrichs, R. Sons Co., Newark, N. J.

#### Sheet Iron and Steel, Manufacturers of.

Atma-Standard Iron and Steel Co., Bridgeport, O.  
Cambridge Iron & Steel Co., Cambridge, Ohio.  
Chess Bros., Pittsburgh, Pa.  
Jersey City Galvanizing Co., 112 John St., N. Y.  
Mahoning Valley Iron Co., Livingston, Ohio.  
Morehead-McCleane Co., Pittsburgh.  
Petersen & Co., 29 Broadway, N. Y.  
Singer, Nimick & Co., Ltd., Pittsburgh, Pa.  
The Mahoning Valley Iron Co., Youngstown, O.  
Alan Wood Co., Philadelphia.  
W. Dewees Wood Co., McKeesport, Pa.

#### Sheet Zinc.

Matthiessen & Hegeler Zinc Co., La Salle, Ill.

#### Show Cases.

Union Show Case Co., Chicago, Ill.

#### Sinks.

Douglas, W. & B., Middletown, Conn.

#### Skates, Ice.

Winslow, Sam'l., Skate Mfg. Co., Worcester, Mass.

#### Skates, Roller.

Henley, M. C., Richmond, Ind.  
Winslow, Sam'l., Skate Mfg. Co., Worcester, Mass.

#### Slag Machines.

Cambria Iron Co., Johnstown, Pa.

#### Smelting Works.

Reeves, Paul S., 780 S. Broad, Phila.

#### Soldering Coppers.

Clendenin Bros., Baltimore, Md.  
Covert Mfg. Co., West Troy, N. Y.

#### Speaking Tubes.

Ostrander, W. R. & Co., 204 Fulton St., N. Y.  
Wollensak, J. F., Chicago, Ill.

#### Spelter.

Matthiessen & Hegeler Zinc Co., La Salle, Ill.  
Missouri Metal Co., St. Louis, Mo.

#### Spoons and Forks.

Boardman, L. & Son, New Haddam, Conn.  
Holmes & Edwards Silver Co., Bridgeport, Conn.  
Rogers, The Wm. Mfg. Co., Hartford, Conn.

#### Sporting Goods.

Hartley & Graham, 313-315 B'way, N. Y.

#### Springs.

Clark & Cowles, Plainville, Ct.  
Coiled Wire Belting Co., Jersey City, N. J.  
Dunbar Bros., Bristol, Conn.  
Miller & Van Winkle, Brooklyn, N. Y.  
Morgan Spring Co., Worcester, Mass.  
Roland, Wm. & Harvey, Phila., Pa.  
Sabin Machine Co., Montpelier, Vt.  
Tuck Mfg. Co., Brockton, Mass.  
Washburn & Moen Mfg. Co., Worcester, Mass.  
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

#### Spring Hinges.

Bommer Bros., Brooklyn, N. Y.  
Pulman Sash Balance Co., Rochester, N. Y.  
Stover Mfg. Co., Freeport, Ill.  
Van Wagoner & Williams Bdw. Co., 14 Warren St., N. Y.

#### Stamped Ware.

Am. Stamping Co., 104 & 106 John St., New York.

#### Stamping Works.

Avery Stamping Co., Cleveland, O.  
Cleveland Stamping & Tool Co., Cleveland, O.

#### Staples.

Cobb & Drew, Plymouth, Mass.  
Titchener, E. H. & Co., Binghamton, N. Y.

#### Steam Gauges.

Bristol Co., Waterbury, Conn.

#### Steam Hammers, &c., Makers of.

Dienelt & Elsenhardt, Philadelphia.  
Dudgeon, Richard, 24 Columbia Street, N. Y.  
Trethewey Mfg. Co., Pittsburgh, Pa.

#### Steam Heating & Oil Separators.

Webster, Warren & Co., Camden, N. J.

#### Steam Separators.

Goubert Mfg. Co., 32 Cortlandt St., N. Y.  
Harrison Safety Boiler Wks., Phila., Pa.  
Webster, Warren & Co., Camden, N. J.

#### Steam Specialties.

Lunkenhelmer Co., Cincinnati, O.

#### Steel, Cold Rolled Strip.

Superior Steel Co., Pittsburgh, Pa.  
Wilmut & Hobbs Mfg. Co., Bridgeport, Conn.

#### Steel Figures and Alphabets.

Krogsrud, W., 61 Fulton St., N. Y.

#### Steel Importers.

Abbott, Wheelock & Co., N. Y. and Boston.  
Hobson, Francis, Seaman & Co., 97 John St., N. Y.  
Jessop, Wm. & Sons, Sheffield, England, or 81 John, N. Y.  
Milne, A. & Co., 1 Broadway, N. Y.  
Newton & Shipman, 83 John, N. Y.  
Wetherell Bros., 93 Liberty St., N. Y.  
Whitney, A. R. & Co., B'way, N. Y.  
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

#### Steel (Mushet's Special).

Jones, B. M. & Co., Boston.

#### Steel Manufacturers.

Atma-Standard Iron & Steel Co., Bridgeport, O.  
Bethlehem Iron Co., S. Bethlehem, Pa.  
Baker, Hermann & Co., 103 Duane St.  
Carbon Steel Co., Pittsburgh, Pa.  
Chester Steel Castings Co., Phila., Pa.  
Chrome Steel Works, Brooklyn, N. Y.  
Crescent Steel Co., Pittsburgh, Pa.  
Frankford Steel Co., Philadelphia.  
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.  
Hobson, Francis, Seaman & Co., 97 John St., N. Y.  
Jessop, Wm. & Sons, Sheffield, England, or 81 John, N. Y.  
Kayser, Ellison & Co., Sheffield, Eng.  
La Belle Steel Co., Pittsburgh, Pa.  
Lukens Iron & Steel Co., Coatesville, Pa.  
Moorehead-McCleane Co., Pittsburgh, Pa.  
Moss, F. W., 83 John, N. Y.  
Pottsville Iron and Steel Co., Pottsville, Pa.  
Bowland, Wm. & Harvey, Frankford, Philadelphia.  
Singer, Nimick & Co., Pittsburgh.  
Superior Steel Co., Pittsburgh, Pa.  
Wordlaw & Co., Sheffield, Eng.  
Wetherell Bros., 93 Liberty St., N. Y.  
Wilmut & Hobbs Mfg. Co., Bridgeport, Conn.

#### Steel, Manufacturers' Agents.

Barns, C. K. & Co., Philadelphia, Pa.  
Butze, Adolph, St. Louis, Mo.  
Corning, Edw. & Co., 29 B'way, N. Y.  
Lindsay, Jas. G. & Co., Phila., Pa.  
Petersen & Co., 29 Broadway, N. Y.

#### Steel Rails, Manufacturers of.

Bethlehem Iron Co., S. Bethlehem, Pa.  
Cambria Iron Co., Johnstown, Pa.  
Montour Iron & Steel Co., Danville, Pa.  
Riverside Iron Wks., Wheeling, W. Va.

#### Steel, Tool.

Frankford Steel Co., Philadelphia, Pa.  
Jessop, Wm. & Sons, Sheffield, England, 81 John, N. Y.  
Jones, B. M. & Co., Boston, Mass.  
La Belle Steel Co., Pittsburgh, Pa.

#### Step Ladders, Rolling.

Bicycle Step Ladder Co., Chicago, Ill.  
Coburn Trolley Track Mfg. Co., Holyoke, Mass.  
Croissant, M., Albany, N. Y.  
Morley Bros., Saginaw, Mich.

#### Stocks and Dies.

Armstrong Mfg. Co., Bridgeport, Conn.  
Billings & Spencer Co., Hartford, Conn.  
Butterfield & Co., Derby Line, Vt.  
Hart Mfg. Co., Cleveland, O.  
Oster Mfg. Co., Cleveland, O.  
Saunders' Sons, D., Yonkers, N. Y.  
Wells Bros. & Co., Greenfield, Mass.  
Wiley & Russell Mfg. Co., Greenfield, Mass.

#### Stone Saws and Planers.

Lincoln Iron Works, Rutland, Vt.

#### Stove Linings.

Ostrander Fire Brick Co., Troy, N. Y.

#### Stove Pipe Thimbles.

Cheney, S. & Son, Manlius, N. Y.

#### Street Lamps.

Rochester Lamp Co., 42 Park Place, New York.  
Steam Gauge & Lantern Co., Syracuse, N. Y.

#### Structural Iron Work.

Lindsay, Jas. G. & Co., Phila., Pa.

#### Sulphuric Acid.

Matthiessen & Hegeler Zinc Co., La Salle, Ill.

#### Tacks, Brads, Staples, &c.

Anthony & Cushman Tack Co., Taunton, Mass.  
Atlas Tack Corporation, Boston, Mass.  
Clendenin Bros., Baltimore, Md.  
Cobb & Drew, Plymouth, Mass.  
Grand Crossing Tack Co., Grand Crossing, Ill.

#### Taps and Dies.

Butterfield & Co., Derby Line, Vt.  
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.  
Manning, Maxwell & Moore, 111 Liberty St., N. Y.  
Wells Bros. & Co., Greenfield, Mass.  
Wiley & Russell Mfg. Co., Greenfield, Mass.

#### Testing Laboratories.

Riehle Bros. Testing Mach. Co., Philadelphia.

#### Testing Machines.

Riehle Bros. Testing Mach. Co., Phila.

#### Theatrical Hardware.

Wollensak, J. F., Chicago, Ill.

#### Thill Springs.

Frost Thill Spring Co., Boston, Mass.

#### Thrust Collars.

Gouverneur Mach. Co., Gouverneur, N. Y.

#### Timber and Mineral Lands.

Robertson, E. Co., Cincinnati, O.

#### Time Record.

Scattergood, H. W., Phila., Pa.

#### Tin Plate Machinery.

Lloyd Booth Co., Youngstown, Ohio.

#### Tinning Process.

Sands, Thos., Nashua, N. H.

#### Tinware.

Am. Stamping Co., 104 & 106 John St.

#### Tire Upsetters.

Butts & Ordway, Boston, Mass.

#### Toe Calks, Steel.

Burke, P. F., Boston, Mass.

#### Tool Blocks.

Hulbut-Rogers Mch. Co., South Sudbury, Mass.

#### Tool Chests.

Am. Tool Co., 200 W. Houston St., N. Y.

#### Tool Holders.

Armstrong Bros. Tool Co., Chicago, Ill.

#### Tools.

Brown, R. H. & Co., New Haven, Conn.  
Hogson & Pettis Mfg. Co., New Haven, Conn.  
Mayhew, H. H. Co., Shelburne Falls, Mass.  
Mills Falls Co., 93 Reade, N. Y.  
Richardson, C. F. & Son, Athol, Mass.  
Standard Tool Co., Athol, Mass.  
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.  
Wilkinson, A. J. & Co., Boston, Mass.

#### Tools, Blacksmith and Wheelwright.

Buffalo Forge Co., Buffalo, N. Y.  
Butts & Ordway, Boston, Mass.  
Champion Blower & Forge Co., Lancaster, Pa.  
Plumb, Fayette R., Philadelphia, Pa.  
Wiley & Russell Mfg. Co., Greenfield, Mass.

#### Tools, Steam and Gas Fitters'.

Saunders' Sons, D., Yonkers, N. Y.

#### Tools, Tinner's.

Peerless Cooker Co., Buffalo, N. Y.

#### Torches, Oil and Gasoline.

Dangler Stove & Mfg. Co., Cleveland, O.  
Schneider & Trenkamp Co., Cleveland, Ohio.

#### Transom Lifters.

Wollensak, J. F., Chicago, Ill.

#### Trucks, Manufacturers of.

Clark, G. P., Windsor Locks, Conn.

#### Tubes, Seamless Drawn Copper.

Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.  
Randolph & Clowes, Waterbury, Conn.

#### Tubes, Steel.

Avery Stamping Co., Cleveland, O.  
Lena's, John S. Son & Co., 4 Fletcher St., New York.  
U. S. Projectile Co., Brooklyn, N. Y.

#### Tumbling Barrels.

Henderson Bros., Waterbury, Conn.

#### Turnbuckles.

Cleveland City Forge & Iron Co., Cleveland, O.  
Merrill Bros., Brooklyn, E. D.

#### Twist Drills, Makers of.

Cleveland Twist Drill Co., Cleveland.  
Morse Twist Drill & Machine Co., New Bedford, Mass.  
New Process Twist Drill Co., Taunton, Mass.  
Standard Tool Co., Cleveland.

#### Valves, Gas, Water and Steam.

Chasman Valve Mfg. Co., Boston.  
Vyon-Evans Mfg. Co., Philadelphia, Pa.  
Jenkins Bros., 71 John, N. Y.  
Lunkenhelmer Co., Cincinnati, O.  
McNab & Harlin Mfg. Co., 56 John, N. Y.

#### Ventilator Appliances.

Howard & Morse, 45 Fulton St., N. Y.

#### Vise Jaws.

Newark Mch. Tool Co., Newark, N. J.

#### Vises.

Hollands Mfg. Co., Erie, Pa.  
Howard Iron Works, Buffalo, N. Y.  
Mills Falls Co., 93 Reade St., N. Y.  
Prentiss Vise Co., 44 Barclay, N. Y.

#### Wagon Jacks.

Covert Mfg. Co., West Troy, N. Y.  
Covert's Saddlery Works, Farmer, N. Y.

#### Washers.

Haskell, Wm. H. Co., Pawtucket, R. I.  
Milton Mfg. Co., Milton, Pa.  
Sternbergh, J. H. & Son, Reading, Pa.

#### Watches.

Ingersoll, R. H. & Bro., 85 Cortlandt St., N. Y.

#### Water Coolers.

Shepard, Sidney & Co., Buffalo, N. Y.

#### Water Meters.

Worthington, Henry R., 86 & 88 Liberty St., N. Y.

#### Water Wheels.

Poole, Robt. & Son Co., Baltimore, Md.

#### Wheelbarrows.

Amer. Steel Scraper Co., Sidney, Ohio.  
Bryan Mfg. Co., Bryan, Ohio.  
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.  
Sidney Steel Scraper Co., Sidney, O.

#### Window Cleaners.

Bourke Mfg. Co., Youngstown, O.

#### Window Cord, Makers of.

Samson Cordage Works, Boston, Mass.

#### Wire, Manufacturers of.

Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.  
Miller & Van Winkle, Brooklyn, N. Y.  
New Castle Wire Nail Co., New Castle, Pa.  
New Haven Wire Mfg. Co., New Haven, Conn.  
Prentiss, Geo. W. & Co., Holyoke, Mass.  
Salem Wire Nail Co., Salem, O.  
Trenton Iron Co., Trenton, N. J.  
Washburn & Moen Mfg. Co., Worcester.  
Wetherell Bros., 93 Liberty St., N. Y.  
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.  
Wright & Colton Wire Cloth Co., Worcester, Mass.

#### Wire Cloth.

Barnum, E. T., Detroit, Mich.  
Clinton Wire Cloth Co., Clinton, Mass.  
Darby, Edward & Sons, Philadelphia.  
Estey, W. S., 65 Fulton, N. Y.  
Gilbert & Bennett Mfg. Co., 42 Cliff.  
Howard & Morse, 45 Fulton, N. Y.  
Ludlow-Saylor Wire Co., St. Louis, Mo.  
N. J. Wire Cloth Co., Trenton, N. J.  
Scheler & Sons, Buffalo, N. Y.  
Wickwire Bros., Cortland, N. Y.  
Wright & Colton Wire Cloth Co., Worcester, Mass.  
W. S. Tyler Wire Works Co., Cleve'd.

#### Wire Cutters.

King, J. M. & Co., Watertown, N. Y.

#### Wire Dies.

McFarland, Wm., Trenton, N. J.  
Newton & Shipman, 83 John St., N. Y.

#### Wire Fences, See Fencing, Iron and Wire.

#### Wire Goods, Manufacturers of.

Bromwell Brush & Wire Goods Co., Cincinnati, Ohio.  
Darby, Edward & Sons, Phila.  
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.  
Ludlow-Saylor Wire Co., St. Louis.  
Ossawan Mills Co., Norwich, Conn.  
Scheler & Sons, Buffalo, N. Y.  
Wickwire Bros., Cortland, N. Y.  
Williamson, C. T., Wire Novelty Co., Newark, N. J.  
Wire Goods Co., Worcester, Mass.

#### Wire Machinery.

Am. Tool Wks., Cleveland, O.  
Manville, E. J. Mch. Co., Waterbury, Ct.  
Morgan Construction Co., Worcester, Mass.  
Waterbury Mch. Co., Waterbury, Conn.

#### Wire Straightening and Cutting Machinery.

Adt, John & Son, New Haven Conn.

#### Wire Nails.

Bond Nail Co., Raynham, Mass.  
Indiana Wire Fence Co., Crawfordsville, Ind.  
Kilmer Mfg. Co., Newburg, N. Y.  
New Castle Wire Nail Co., New Castle, Pa.  
Phillips, Townsend & Co., Phila., Pa.  
Salem Wire Nail Co., Salem, O.  
Taunton Wire Nail Co., Taunton, Mass.  
Whitney, A. R. & Co., New York City.

#### Wire Rods, Steel.

New Castle Wire Nail Co., New Castle, Pa.  
Washburn & Moen Mfg. Co., Worcester, Mass.  
Whitney, A. R. & Co., 17 B'way, N. Y.  
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

#### Wire Rope, Iron and Steel.

Makers.  
Broderick & Bascom Rope Co., St. Louis, Mo.  
California Wire Works, San Francisco.  
Hazard Mfg. Co., Wilkesbarre, Pa.  
A. Leschen & Sons Rope Co., St. Louis.  
Trenton Iron Co., Trenton, N. J.  
Washburn & Moen Mfg. Co., Worcester, Mass.

#### Wire Rope Machinery.

Kay, J. F., Passaic, N. J.

#### Wood Turning.

Cleveland Wood Turning Co., Cleveland, O.

#### Wood-Working Machinery.

Egan Co., Cincinnati, Ohio.  
Seneca Falls Mfg. Co., Seneca Falls, N. Y.  
Wilkinson, A. J. & Co., Boston, Mass.

#### Wrenches, Manufacturers

Bemis & Call Hardware & Tool Co., Springfield, Mass.  
Billings, Spencer & Co., Hartford, Conn.  
Coes Wrench Co., Worcester, Mass.  
Trimont Mfg. Co., Roxbury, Pa.  
Walworth Mfg. Co., Boston, Mass.  
Williams, J. H., Brooklyn, N. Y.

#### Wringers.

Colby Wringer Co., Montpelier.  
Peerless Mfg. Co., Cleveland, Ohio.

#### Yacht Hardware.



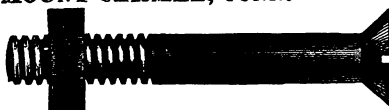
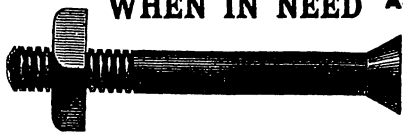
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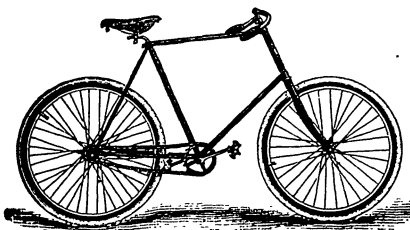
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Published by DAVID WILLIAMS, 96-102  
Reade Street, New York. Printed by  
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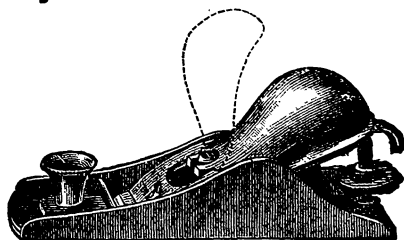
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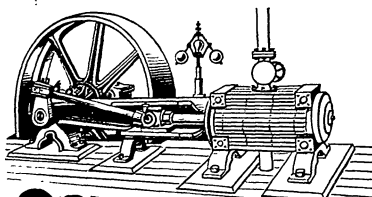
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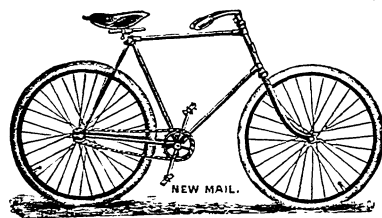
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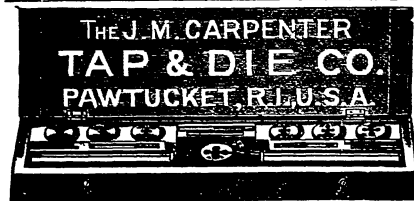
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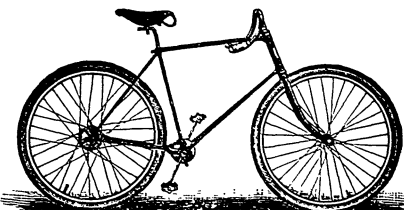
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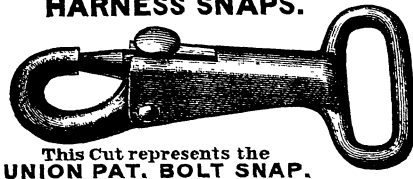
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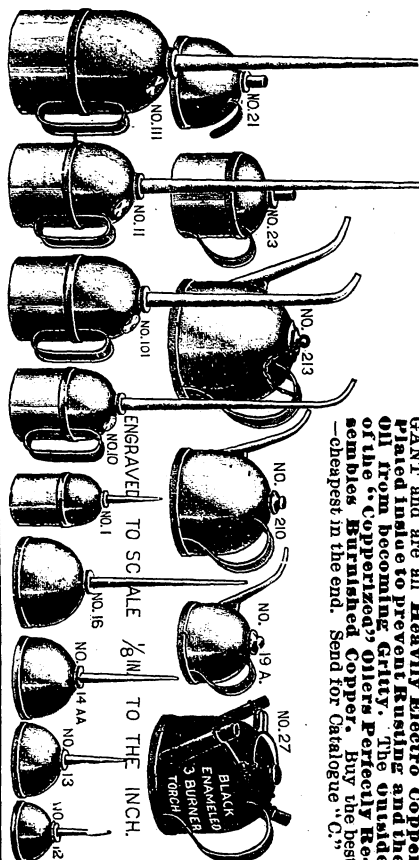
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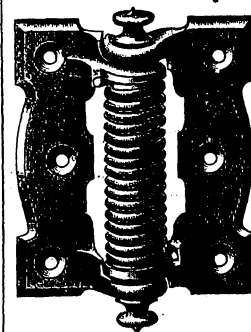


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1 Dozen pairs in a box. 1/2 Gross pairs in a case.  
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# THE IRON AGE

THURSDAY JUNE 14, 1894.

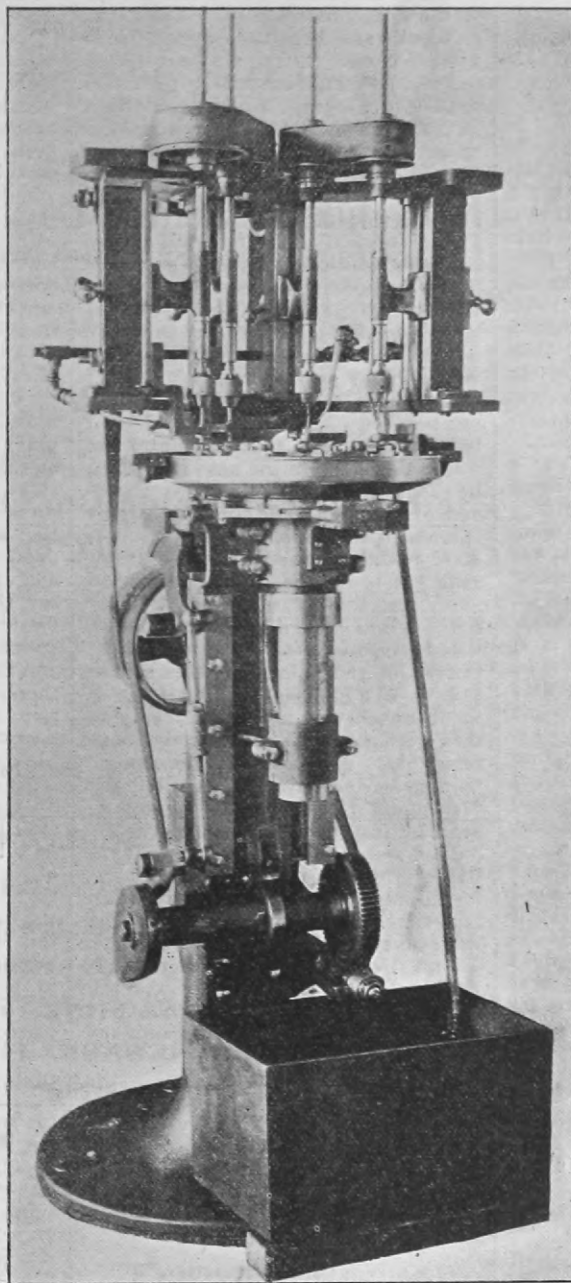
## Chain Block Drilling and Reaming Machine

The Woodruff Mfg. Company of Hartford, Conn., have designed a machine for the continuous operations of drilling and reaming the blocks of bicycle chains. The jigs or work holders are fastened to the table, which feeds and indexes automatically. By this arrangement the blocks are drilled, reamed, and counterbored at one setting, thereby insuring greater accuracy than when the work is done at separate operations. Both drills and reamers run in guides or bushings, which are located close to the work. The finished blocks are removed and the jigs cleaned and filled while the drilling and reaming are going on, thus making the working of the machine continuous. The spindles are driven by an endless belt, the pulleys running on hollow studs which take the pull of the belt. The spindle bearings are provided with an adjustment for wear. The table has a cam feed driven by a worm and worm wheel. The jigs or work holders are cleaned by means of a pneumatic device, the oil and chips being carried through the hollow spindle of the table to the tank below where the oil is strained and returned to the drills by means of a pump. One of these machines has been in constant operation at the works of the manufacturers for the past six months.

A permanent organization, to be known as the Lake Line Association, was formed in Buffalo recently, the object of which is to maintain uniform and reasonable rates for lake and rail traffic and to avoid unjust discrimination in transportation charges. The lake and rail managers who met for the purpose of organizing the association represented the following companies: The Union Steamboat Company, the Western Transit Company, the Anchor Line, the Northern Steamship Company, the Lehigh Valley Transportation Company, the Lackawanna Transportation Company, the Milwaukee, St. Paul and Buffalo Steamship Companies, the Clover Leaf Line and the Union Transit Company. It is believed that the existence of such an association will tend greatly toward creating a better condition of affairs in the lake and rail traffic.

Cuba is referred to, by a Havana trade report of recent date, as being in the throes of a serious commercial

crisis. The planters are laboring under great financial difficulties, the paralyzation of business in general preventing them from meeting their engagements, and the banks are unable to help them through. It was anticipated that the Government would do something in behalf of the exhausted indus-



CHAIN BLOCK DRILLING AND REAMING MACHINE.

tries and commerce of Cuba, but the news has arrived that besides maintaining in their full integrity all taxes on sugar, cigar, cigarette and other manufactures, the total of the ingresses of the new budget for the economical year 1894-95 has been increased to \$26,000,000, which, as it may easily be understood, causes much dissatisfaction to prevail among all the working classes.

## An Independent Electric Locomotive.

An independent electric locomotive is now propelling a street car in service on the Calumet Company's tracks, Sixty-seventh street, between Cottage Grove and Stony Island avenues, Chicago. The car has been in public service for about a month. It is the product of the Independent Electric Traction Company of Chicago, and is built after plans patented by W. H. Patton. For more than two years Mr. Patton worked to perfect his plan, and the car now in use is the first of its kind to be put into successful operation. Its weight is 15,000 pounds, as against 12,000 pounds for the average trolley car. It runs quietly and smoothly, and it is claimed that cars of this pattern can be placed and maintained in service at one-half the expense per car mile required for the overhead trolley system. Inclosed in the center of the car are a gas engine, dynamo and storage battery. The gas engine is fed by gasoline from a small tank on the roof of the car. The engine supplies the power for a direct connected shunt wound dynamo of 250 volts pressure, which in turn generates the electricity, which is conveyed direct to the motors and to a storage battery. The engine is self operating after once started and is under the control of the motorman, who stops or starts the car or turns on or off the power from his customary position on the front platform. When the engine is started, the car being at rest, the current generated by the dynamo goes direct to the storage battery. The working of the engine has nothing to do with the moving of the car, its use being simply to generate the electric current. When the car is in motion the current passes directly from the dynamo to the motor. When the whole output of the dynamo is not needed by the motors, by reason of a light load or an easy grade, the superfluous current goes direct to the storage battery. This stored power, in turn, is automatically released and goes to the instant relief of the motors when required by heavy loads or steep grades. The low voltage used makes it practically impossible to "burn out" a motor. Expert motormen are not required and a track and motor cars are all that is needed for a complete equipment. The car now in use has rendered a service of 75 miles a day since it was put into use.

The New York and New Jersey Bridge bill was signed by the President on June 8.

## The Foundrymen's Association.

The regular monthly meeting of the Foundrymen's Association was held at the Manufacturers' Club, in Philadelphia, on Wednesday the 6th inst., the vice-president, Thos. Devlin, occupying the chair. There was a good attendance of members.

The Executive Committee reported that after a general investigation they found the foundry trade in a very depressed condition, in fact no better than it had been during the past seven or eight months. The average was about as follows, which represented the working of 100 foundries:

10 running full time, or six heats per week.  
25 running five heats per week.  
25 running four heats per week.  
35 running three heats per week.  
5 stopped altogether.

In addition to this state of things, the committee had found prices for castings very much reduced. It was true pig iron had fallen in price \$4 to \$6 per ton, but castings had fallen in the mean time more than double that amount. They were of the opinion that reductions did not apply entirely to the foundry trade, as almost all other trades were affected in about the same proportion. They could see no decided change for the near future and it appeared to them that this year's business would be unprofitable.

They had learned, however, of a great many economies which were being practiced in all directions. Molding machines were being placed in a number of shops where duplicate work was required, and now and then cases of wages being reduced were heard of. Every one seemed to be waiting for better times, and when they came—it must be sooner or later—they would be most welcome. This was also the case with the makers of steel castings, who had felt the depression to even a greater extent than iron foundries. They found that stock had been very much reduced and people were buying only from hand to mouth to fill immediate wants. There was a great scarcity of bituminous coal, caused by the strikes all over the country; some concerns had stopped entirely for the want of it. While this was a great loss to the miners, railroads and manufacturers at present, it might prove to be a blessing in disguise later on and encourage the users of all classes of goods to lay in larger stocks to provide for emergencies of this kind.

C. R. Baird & Co. of Philadelphia, and the Phoenix Iron Company of Cleveland, Ohio, were elected to membership in the association.

The treasurer reported a balance in hand of \$194 58 and all bills paid.

The Price Committee then reported by sections.

**Cast Iron Water Pipe.**—In reporting for this section, P. D. Warner of the Reading Iron & Foundry Company of Reading, Pa., said that he had little to report that was favorable to the trade except that the consumption of cast iron pipe was very good indeed in spite of the depression, and if people would study their interests he believed the trade would be still larger. He could not see how anybody in years to come could expect to buy pipe for less money than it could be bought for at this time. As he had had occasion to say before, while the cast iron pipe business was very large the demand was readily and easily supplied. When it was remembered that there were 40 or more

pipe foundries in business to-day where there were but 10 or 15 ten years ago, the oversupply was easily accounted for. Not only in this but in other industries the oversupply was apparent. Furnacemen and others in kindred trades when pressed increased their capacities in the belief that the duller the trade the larger the output should be. People deceived themselves with the idea that by increasing their output they were decreasing their cost.

The pipe foundry trade, he said, was overdone. The good times and high prices encouraged it, and the South came in with large foundries, cheap iron, fuel and labor, and Northern and Northwestern concerns were crowded to the wall. As long as that was kept up there was no future in the cast iron pipe trade and none to be hoped for in years to come. He had always believed the business could have been controlled so that foundrymen would be confined to their own district, but for one reason or another nothing had been accomplished and the competition had been going on. There were always people, he said, who thought that in the fight for the survival of the fittest they were the fittest and could outstrip all others in the race, but who were themselves the first to go under. There were many who thought that way and were not willing to enter any arrangement which would enable them to get a fair profit, but he believed such an arrangement would come eventually. It had been established in the old country and would be here. In the next few years, he thought, owing to the great cheapness of pipe, the trade might be largely stimulated and sufficient work result to go around to all the foundries, but not sufficient to raise the price. Pipe had lately been sold at as low as \$14.75 per ton. It was second-hand pipe, but it was in competition with new pipe. Outside of that, pipe had been sold at \$17 to \$17.70. He thought some of the members present might feel glad they were not in the pipe foundry business. He used to value the general foundry business at very little, but last year and this year it was the only redeeming feature of his business.

**Cast Iron Soil Pipe Section.**—R. A. Regester of Regester & Sons, Baltimore, for this section reported that since last reporting quite a number of foundries were running full and prices were firm.

**Sash Weights.**—For this section, E. E. Brown of E. E. Brown & Co., Philadelphia, reported that the volume of business in this section was smaller and prices were extremely low. Each day lower prices were heard of.

Mr. Stirling read a paper by Wm. Molin, E.M., of New York, on the subject of "Foundry Chemistry," which we shall print in a future issue.

Mr. Flagg then read a paper by Prof. J. B. Johnson of Washington University, St. Louis, Mo., on

### The Strength and Resilience of Structural Cast Iron,

as follows:

The working qualities of structural castings are of extreme importance, so much so that the necessity for these qualities goes without saying. Furthermore, these qualities can be tested, and are tested, of necessity in the finishing of the castings for service. Any failure of the working qualities is immediately discovered by the machinist and corrected by the foundryman. The strength and the toughness of the castings, however, are two qualities which are not usually determined at all except by such incidental indications of

strength and toughness as come from the breakage of these parts in practice under loads or shocks, which they were assumed to be able to resist. This indication is, of course, a very inadequate one and gives at best no measurable test of the strength or toughness of the iron.

In this paper the author will undertake to show the necessity for these qualities and how they may be determined by actual tests. He will further try to show that strength and toughness are not identical, and that the one does not give any indication of what the other may be. Thus a very strong iron may be a very brittle one, and on the other hand a very tough iron may be comparatively weak.

#### THE STRENGTH OF CAST IRON.

Cast iron is not usually used in structures to carry tensile stress alone, but generally used for columns and beams. In machinery castings, however, where all the parts are made of cast iron, some parts are subjected wholly to tensile stress. There are three kinds of strength, therefore, of cast iron, which may be determined by actual tests—namely, tensile strength, compressive strength, and strength in cross bending, as a beam. When a cast iron beam, or any cast iron form, is broken in cross bending the fracture always occurs on the tension side of the member, and hence the failure is one in tension. In the case of cast iron columns, provided the load is symmetrical and the column is equally strong on all sides, the failure would be one in compression. It so happens, however, that the tensile strength of cast iron is a good measure of both its cross bending and of its crushing strength—that is to say, that cast iron which is strongest in tension is likely to be strongest in compression and in cross bending.

All kinds of strength of cast iron, therefore, may be determined by a tension test. It may also be determined by a cross bending test. The tension test has one advantage over the cross bending test, inasmuch as the whole length of the tension test specimen is subjected to the same stress, and if there be a flaw anywhere in the entire length of the specimen, failure will occur at that point, and hence the weakness of the specimen will be shown wherever this weakness may occur. In cross bending tests, where the bar is loaded in the middle, the tendency to break is greatest at the center, where the load is placed, and if a flaw occurs near one end it would not be discovered by the bar rupturing at that point. Hence we may say that the tension test is a better test to discover any possible flaws which may be in the specimen, but the cross bending test is probably better for determining the strength of the metal, since, in the latter case, the rupture must occur near the center of the beam, and if this portion of the beam be free from flaw the true strength of the metal is determined. It is also much easier to make a test of cast iron in cross bending than in direct tension, and furthermore a cross bending test furnishes the means of determining the toughness of the iron, as will be explained later, and therefore in what follows cross bending tests will be taken as a standard method of determining both the strength and the toughness of the iron.

#### CROSS BENDING TESTS.

The most convenient form for a test specimen of cast iron for cross bending is a rectangular cross section about 24 inches long. The size of the cross sec-



tion should have some relation to the thickness of the webs or parts in the structural forms into which the metal is run and for the strength of which the tests are made. Thus, if the iron is to be used in forms where the thickness of the metal is about 1 inch, the test specimen should be made about 1 inch square. If, however, the metal is to be used in parts the thickness of which is not more than  $\frac{1}{2}$  inch, then it would be well to make the test specimens  $\frac{1}{2}$  inch thick and perhaps  $1\frac{1}{2}$  to 2 inches wide.

In the case of stove iron the test specimens should not be more than  $\frac{1}{2}$  inch thick and about 2 inches wide. The length of the specimen is immaterial and should be such a length as is adapted to the testing machine or apparatus. The cross section of the test specimen should, of course, be uniform from end to end—that is to say, it is of the same size throughout.

The same care should be taken in the molding and casting of test specimens as would be taken in any regular casting where sound and perfect work is desired. It would usually be cast horizontally, but with due precautions, as in the interception of the slag, in the escape of the air, in the smoothness of the sides and the perfection of the corners. It should be so molded as to free itself readily from the sand and should be tested without planing down.

In testing such a bar it should be supported on knife edges near the ends, these knife edges being at a definite distance apart. The distance between these knife edges being the length of the beam, so far as the test is concerned, any overhanging ends of the specimen beyond the bearings having no effect on the strength of the beam. This specimen is then broken by placing a load at the center, preferably by means of another knife edge, and this load applied slowly and uniformly and without shock. About the only way to do this properly is by means of a screw turned steadily and very slowly. There are various cross bending testing machines on the market, the principal ones being manufactured in Philadelphia. The modulus of rupture of cast iron in cross breaking corresponds to the tensile strength of the iron, and if the iron were perfectly elastic up to the point of rupture this modulus of rupture would be the same as the tensile strength in pounds per square inch, but since cast iron takes some permanent set before it breaks, the theoretical formula no longer applies, so that the computed modulus of rupture as determined from cross breaking tests is found to be always very much larger than the true tensile strength of the cast iron, its average value being from one and one-half to twice as much as the strength per square inch in tension. If the cast iron has a tensile strength of 20,000 pounds to the square inch its modulus of rupture in cross bending will be, therefore, from 30,000 to 40,000 pounds. It is common to assume that a tensile strength of 20,000 pounds corresponds to a cross breaking strength, or modulus of rupture, of about 36,000 pounds per square inch. To find this modulus of rupture from a cross breaking test on a rectangular bar we use the following simple formula:

$$f = \frac{3}{2} \left( \frac{Wl}{bh^2} \right)$$

where  $f$  = modulus of rupture in cross bending in pounds per square inch,  $W$  = load at center of beam in pounds;  $l$  = length of beam between bearings in inches;  $b$  = horizontal breadth of beam

in inches;  $h$  = vertical height or depth of beam in inches.

It is much better to use this formula and compute  $f$  from the cross breaking weight  $W$ , and the dimensions of the bar  $b$ ,  $h$  and  $l$ , than to use some thumb rule, as, for instance, that a bar 1 inch square and 12 inches long should carry a load of 2000 pounds at the center. This would give a modulus in cross breaking of 36,000 pounds, which indicates a very fair quality of cast iron, so far as strength is concerned, but if the specimen should prove to be a little more than 1 inch square or a little less there is nothing in the specification to show by how much the load should vary to compensate for this change of size. Whereas, if it be specified that the modulus of rupture should be 36,000 pounds, that could be determined from the above formula very easily whatever the dimensions may have been. In fact,  $b$  and  $h$  should always be measured to the nearest  $\frac{1}{100}$  inch, and, of course, the castings could not be made of any given size to anything like this degree of accuracy.

In all cross bending tests of cast iron some means should be provided for accurately measuring the deflection of the bar up to the point of rupture. This can only be properly done by the aid of some kind of attachment to the testing machine itself. These deflections should be measured to the nearest  $\frac{1}{100}$  inch. The use of the deflection is to enable us to compute the resilience or elastic spring of the iron, as will be explained below.

#### RESILIENCE OF CAST IRON

Resilience is a scientific term which signifies the toughness or the ability of the material to resist a shock or blow. It is not strength, neither is it deflection, but it is a property representing these two qualities combined. Thus if the total breaking load be multiplied by the total deflection of the beam and this product divided by two the result is the resilience of the beam in inch pounds, provided the load were measured in pounds and the deflection in inches. This product varies directly with the form and volume of the beam, irrespective of its dimensions, so that if the half product be divided by the total number of cubic inches in the beam the result represents the resilience of the iron for a rectangular beam in inch pounds per cubic inch of metal. This is an absolute measure of the resilience or toughness of the iron, but it is easier to weigh the specimen than it is to compute its volume in cubic inches. Hence we may find the resilience of a rectangular beam per pound of metal by dividing the total resilience by the number of pounds in the specimen, just as before we found it per cubic inch by dividing by the number of cubic inches in the specimen. The writer prefers this latter method, and therefore he recommends the following:

**RULE.**—Multiply the breaking load in the middle of the beam by its deflection at the time of rupture and divide the product by twice the weight of the beam in pounds.

The result should be not less than 20 for ordinary cast iron, and may be as high as 50 for the best quality of refined cast iron, such as is commonly known as gun metal. For a very good quality of machinery castings, or such as should be used in railroad work, car construction, car wheels and the like, where the metal is subjected to severe shocks and blows, a result obtained as above of not less than 30 should be re-

quired. For stove iron a result not less than 40 should be specified.

In using the above method of making tests and computing the resilience of rectangular cast iron bars there is no necessity of carefully measuring the cross section of the bar, or its actual length. It should, however, be supported very near its ends, if the whole weight is to be taken in computing the resilience. It is also necessary to measure the deflection accurately. The only data, therefore, which need be taken are the weight of the bar in pounds, the breaking load in pounds and the deflection in inches. Applying the above rule to this data, we obtain at once the measure of the toughness of the iron, which has been described as including both the strength and the deflection. If it is desired to know the strength alone, then it is necessary to measure the length, breadth and height, and compute the strength per square inch by the formula

$$f = \frac{3}{2} \left( \frac{Wl}{bh^2} \right)$$

This value of  $f$  is called the "modulus of rupture" in cross breaking and is about one and three-fourths times the real tensile strength.

#### TENSION TESTS.

In all tests of cast iron in tension the specimen should be cast round, free from all defects, and then turned down in a lathe throughout its entire length, the middle portion being reduced to a somewhat smaller diameter than the ends. It is necessary to turn down the end portions in order to allow the specimen to fit the grips perfectly, and the middle portion should be made somewhat smaller to insure against breaking in the grips. If the specimen be made  $1\frac{1}{2}$  inches in diameter, and the rough casting turned down to  $1\frac{1}{4}$  inches at the ends, and the middle portion reduced to 1 inch in diameter, we would have the ideal tensile test specimen for cast iron. The reduction from the end to the middle portion should be by a curved shoulder, and not by an angular offset, in order to prevent rupture at this point. The specimen should be some 12 to 16 inches long, and the ends which are gripped should be left about 3 inches long, the remaining portion being turned down to the uniform diameter of 1 inch. Such a specimen can only be broken upon a regular tension testing machine, such as few foundries have in their outfit, and hence these tests are not so well adapted to common practice as the cross breaking tests described above.

#### CROSS BREAKING TESTING MACHINES.

Several concerns manufacture cross breaking testing machines which give indications of the deflection, such as are required in the application of the rule given above for determining resilience. In these tests it is very necessary that the load be put on slowly and with perfect uniformity, and this is accomplished in all these machines by means of a screw. Every foundry which undertakes to turn out a first class grade of cast iron should have one of these cross breaking testing machines in its outfit, and should study the character of all its mixtures by means of such tests as have been described in this paper, these tests being for both strength and resilience.

It must be noted that both the strength and the resilience can be determined from the same test. Having measured the length, breadth and height of the bar, and determined the

breaking load, we can compute the breaking strength as described above; also having weighed the bar and determined its breaking load and its deflection, the resilience in inch pounds per pound of metal can be determined, so that a single test in cross breaking fixes both the strength and the resilience or toughness of the iron. It must not be forgotten that these two qualities are entirely distinct, and must not be mistaken the one for the other. Thus, one mixture may be very strong and brittle, and another comparatively weak but very high in resilience. It is not impossible, however, to obtain both great strength and high resilience from the same mixture, and this, of course, is the ideal kind of cast iron. Such iron offers the greatest resistance both to dead loads and heavy strains, and also to such shocks and blows as it may receive either in actual practice or from some accident.

Because the resilience of cast iron has not heretofore been commonly studied, or even thought of as a measurable property, is no reason why it should not be carefully examined into. This term is now coming into common use, and practical men must accustom themselves to its use and understand its meaning. If a manufacturer of cast iron would obtain one of the testing machines described above and carefully attend to the tests for resilience and compare his results with his mixtures, he could soon convince himself of the significance and importance of the resilience tests, and would probably never consent to grope in the dark in regard to the qualities of his products, as nearly all foundrymen have been accustomed to do. The character of his iron would then be no longer a matter of opinion, but would be determined absolutely, so that the proprietor could judge for himself of its quality from these tests and not have to rely implicitly upon the mere opinion of his foreman or superintendent. Furthermore, such tests as these cost very little, and any intelligent workman or clerk can be taught to make them and the accompanying computations.

To make such tests valuable a test record book should be kept, in which the mixture should be put down and the results of the tests alongside, and these carefully preserved. Such a record book of mixtures and corresponding tests would soon become of great value as part of the capital stock of the concern, and this knowledge would not disappear from the establishment when the superintendent took his departure; neither would there be any personal element in it, and it would in no sense be a matter of opinion, but would be an absolute measure of the quality of the iron resulting from certain mixtures, which knowledge would be the common property of the entire establishment. There is probably no other way in which a small sum of money can be made to produce such valuable and permanent results in the carrying on of any foundry as in the making of such tests as here described and the careful preservation of the records.

#### The Coal Strike.

Mr. Wanner then offered the following resolution:

*Whereas*, The present strike of coal miners of this and other States greatly intensifies the already calamitous condition of manufacturers and their employees for the sufficient want and greatly advanced cost of fuel; therefore,

*Resolved*, As the sense of this meeting, that we regard the strike as unwarranted in the present condition of trade, and being waged without the slightest hope of suc-

cess, should be terminated forthwith, and that the owners of coal mines should be permitted to operate their works by the efficient aid of the several State authorities without further delay or sentiment.

Mr. Riehle seconded the resolution.

In support of the resolution Mr. Wanner said that his works had been idle for four or five months, and as soon as they got a little something to do they found themselves out of coal, and in consequence had not been running for the last week or ten days. While they could now get coke they had to pay about twice as much for it as before the strike. He supposed all present were in about the same condition. There was no use, he said, hedging about this business. It seemed to him that the business men in Philadelphia and the whole country should get rid of the sentiment of permitting others to fight their battles alone, and even if they were somewhat interested or affected by it they should all stand together and establish the sentiment that everybody should be free and equal in some respects, and that the laboring man should have the right to offer his services and be paid a certain amount, and stop work at any time if he becomes dissatisfied, but he should have no right to prevent other people from using their property or employing others. Such a course was full of danger, and if persisted in would eventually destroy our free institutions. It was necessary to have a government. Property and the rights of property owners demanded it. When all were suffering it seemed to him that a strike coming in addition made the situation utterly hopeless. Every day the strike continued more people were thrown out of employment and their chances of making a penny destroyed. The resolution might not have much effect, but possibly a little.

Mr. Brown was in favor of the latter part of the resolution, but did not think the association had any right to express an opinion as to the miners' prospect of success.

Mr. Devlin opposed the resolution. He said that for some time he had considered the coal strike and the causes which led to it. The men were poor, and because they were poor they seemed to be oppressed. In other lines of business it was argued that competition from outside sometimes compelled a reduction in prices, but there was not that justification for the cutting down of the miners' wages that had been resorted to during the last two years. They had been cut down, he had learned from the papers, from 55 cents to 35 cents in certain districts. Why were they cut down? What good resulted from it? The man who cut down first would go to the other man's customer and offer coal 5 cents or 10 cents per ton cheaper than his competitor and receive an order. When the other man found he had lost his customer he would make inquiries, with the result that there was another cut. He believed the miners had been unjustly treated and he had deep sympathy with them. Their work was hazardous and hard. He was of the opinion that the association should be careful before they put to a vote and sanction such a resolution as the one before them. If a resolution were passed at all he thought it should ask justice for the men as well as the owners. As Mr. Wanner had said, it was true men could quit work if they chose, but that was not the state of affairs at the present time. The men were organized and the people of this country did not just know how to look at organized labor. He for one should oppose the resolution.

Mr. Flagg indorsed Mr. Devlin's views:

Mr. Wanner, again speaking, said that sympathies did not enter into the question. It did not matter what their feelings were toward the miners, or how they were oppressed. It could not be helped. Business was not a sentiment. When manufacturers realized that by competition they were not in a position to continue their business with profit; when it became only a matter of loss and the quantity of loss in making competition; when they realized that labor in another section of the country was a great deal lower than in their own, and that coal, coke and iron were obtained at less prices than they could get it for; and that if they could not get supplies at the best possible price they were thrown out of business, then they found that they could not help themselves and sentiment was out of the question. At this particular time and in view of the downward tendency of prices in this country, it was utterly and entirely hopeless for anybody to inaugurate a strike of that character. It could not succeed. He remembered the first strike which was inaugurated after the tariff agitation was started through the anthracite regions, after Mr. Cleveland had issued his tariff message to Congress. There was a drop immediately. The strike was inaugurated and failed because a decline in market was started. A strike can never succeed on a declining market. He did not see how manufacturers in Pennsylvania could get along unless they could get fuel at the lowest possible price, nor how this could be effected if the cost of production was raised.

After some further discussion, in which Mr. Brown and Mr. Matlock took part, the resolution was put to the meeting and carried.

The hour being late, the papers of Mr. Keep and Mr. West on "Foundry Chemistry" were not read, but were referred to the next meeting of the association.

The meeting then adjourned.

**The Iron Roofing Trade.**—The lively movement in the iron and steel roofing trade caused by orders being placed for shipment to Western points before the recent advance in freight rates has quieted down, and the business is as dull as other branches of the iron and steel industry. Recently quite a number of concerns have engaged in the manufacture of specialties. The Cambridge Roofing Company, Cambridge, Ohio, have added a lot of new improved machinery for the manufacture of galvanized conductor pipe, and are doing a fair business in this line, and other manufacturers of the same material are kept busy, thus helping to keep up a steady demand for galvanized sheets, which are now growing scarce in the market. The demand for roofing sheets and corrugated iron continues fair, and some makers are seeking places where supplies of sheets can be secured, but the majority have enough stock on hand for their requirements and are not inconvenienced by the shortage caused by stoppage of sheet mills due to the coal miners' strike. The Berger Mfg. Company, Canton, Ohio, have recently introduced many new designs in steel ceilings and siding, and other sheet metal working concerns are turning their attention to this class of work.

The American Line of Atlantic steamers will in future start from New York at a fixed hour—11 o'clock in the morning.

## A New Mechanical Fluid.\*

BY C. W. HUNT, NEW YORK.

A hydraulic piston for adjusting journal boxes to take up the wear from use should have the desirable features of delicacy of adjustment and ample rigidity for any strain which it would be called upon to sustain. The cost of the accurate construction needed and the probable leakage of the fluid would usually prevent serious consideration of this method.

In canvassing the various methods of adjustment which could be used in the bearings of the connecting rods of our steam engines, the advantages and faults of this method were carefully investigated. The inevitable leakage of the liquid presented an almost insurmountable barrier to its use. The

conception of atoms of infinitesimal size.

After making this wide departure from our ordinary conceptions in molecular physics, we can take a further step by imagining a liquid which was composed of atoms as large as bicycle bearing balls. The anticipated trouble from the leakage of the fluid would then disappear as a factor in the ordinary mechanical fitting in steam engine work.

Under compression each ball of a mass of various sizes would have the resultant of all the pressures on it at its center, and consequently would be in a position of equilibrium; but should the inclosing envelope change in form or capacity, a change in the direction of the pressures would take place; first in the balls nearest to the movement, then in the adjoining ones, the balls severally moving in the direction of least re-

ing screw is turned. The mass is kept mobile by putting sufficient pressure on the movable piston.

Fig. 1 is a section of a solid end connecting rod, having an annular brass bushing with an opening, in order that adjustment for wear can be made. One side of the bushing is held in place and adjusted by the pressure of a mass of hardened steel balls, varying in diameter from  $\frac{1}{8}$  to  $\frac{1}{4}$  inch. Between the bushing and the balls is a thin plate of hardened steel to prevent the balls from indenting the softer metal. The adjustment for wear is made by forcing the mass of balls forward with a hardened steel adjusting screw, Fig. 2.

When the wear has become so great that the range of the adjusting screw has been exhausted, a few more balls are inserted under the point of the screw, and an adjustment of the bearing made as before. On the crank end

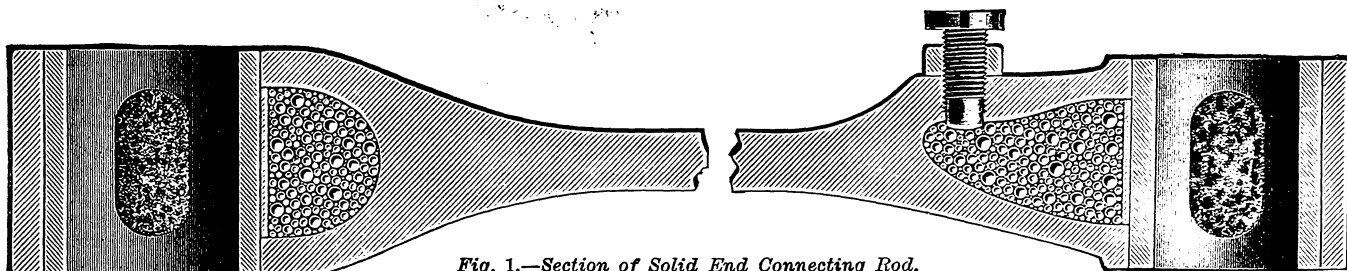


Fig. 1.—Section of Solid End Connecting Rod.

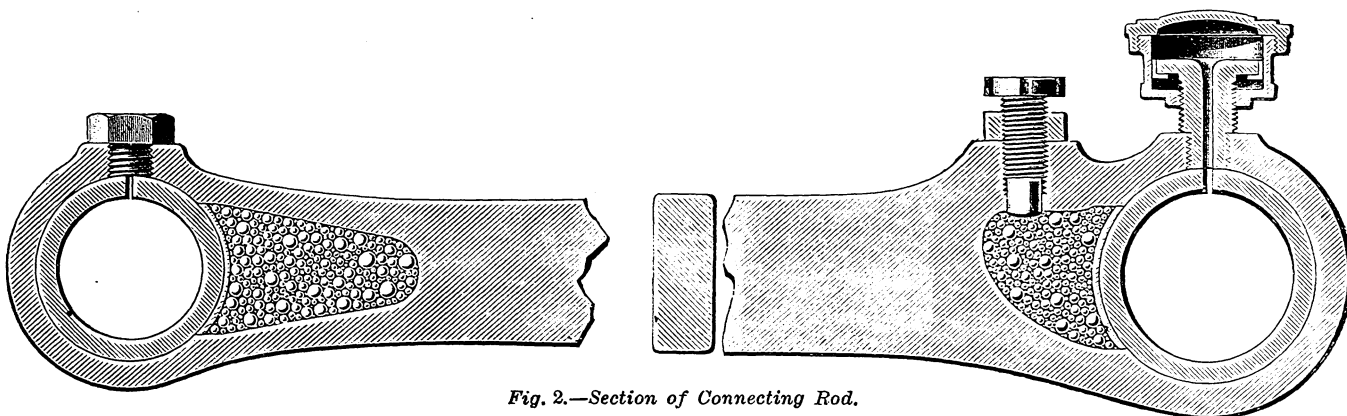


Fig. 2.—Section of Connecting Rod.

## A NEW MECHANICAL FLUID.

thorough examination of its availability for this purpose, however, brought to mind the method of packing the plungers of mine pumps used by Eckley B. Cox, which has since been presented to this society in a discussion of topical questions at the New York meeting, December, 1893.† This method was to fill the spaces for the packing material around the plunger with untried tallow, cut in pieces about 1 inch across, and kept under sufficient pressure to make it flow into the packing spaces. The tallow packing also lubricated the piston, and as it was gradually worn away, the membranes in the tallow were too large to pass between the plunger and its casing, and remained, forming under the pressure a mass of semi-fluid packing. If we consider this material as a fluid we can conceive of it as a liquid, with masses of animal membranes for atoms, instead of the usual

substance, until the resultant of the pressures again came in the center of each ball.

If the mass of balls were all of one size they would interlock.

If these balls of equal size had different coefficients of expansion by heat, it could be imagined that at some higher temperature these balls would become of different sizes, when they would cease to interlock, the mass becoming a fluid above that temperature, a property analogous to the melting point of a solid.

If the balls had different coefficients of compressibility a great pressure on the mass might change the relative diameter of the balls enough to change the solid mass to a fluid.

A mass of balls of various sizes, under pressure, does act like a liquid, as we have ascertained by testing in various ways. The author showed a connecting rod of full size fitted up to be adjusted in this manner, just as it is used in practice, and also a model with a glass front and a spring piston, which permits the individual motion of the steel balls to be seen when the adjust-

of the rod the adjusting screw is on top, but on the cross head end it is on the front side, clear of the cross head, where the adjustment is as conveniently made as it is on the crank end.

We have been running last year forty bearings of this type in various places, in the East and in the West, working with steam boiler pressures of from 80 to 160 pounds, giving pressures per square inch of projected area of the pins ranging from 600 to 1000 pounds. The pressure on the balls per square inch is about 50 per cent. greater. If we assume that the balls are about  $\frac{1}{8}$  inch in diameter, and that 60 balls are in contact with the bushing on each square inch, the pressure sustained by each ball would be from 15 to 25 pounds. Assuming that the elastic limit of the steel in the connecting rod shown is 30,500 pounds per square inch, and that the hardened steel balls have a pressure of 25 pounds on each one, we would expect that each ball would imbed itself in the steel envelope until the area sustaining the pressure was strained to the elastic limit. This area would be  $\frac{1}{1270}$  square inch for each

\*From a paper read at the Montreal meeting of the American Society of Mechanical Engineers.

† This method was described and illustrated in *The Iron Age* of December 14, 1893.

ball, which is almost exactly equal to the area of a circle  $\frac{1}{100}$  inch in diameter. At first the bearings require frequent adjustment, but the balls soon get in a fixed position, and then they need adjustment for the wear of the bushing only. The adjustment of these bearings is apparently as delicate and positive as though a liquid was used. In cases where the adjusting screw was purposely made to turn freely, the adjustment could easily be made by the thumb and fingers, and if care was not used too great a pressure on the pin would result.

The connecting rod for a 10-inch diameter cylinder steam engine here shown is a steel casting made by I. G. Johnson & Co., fitted with an adjusting screw having 14 threads to an inch, and a pressure area of balls on the bushing 18 times the area of the screw. If the screw is turned with a force of 25 pounds on an 8 inch wrench, the friction of the screw absorbing 25 per cent. of the force, the pressure on the bushing would be over 50 tons. While this pressure might be used in other applications of this novel fluid that have been proposed, it was clearly out of place in connecting rod bearings, and we now make the head of the adjusting screw of such a form that an ordinary wrench cannot be used, and the adjustment made only by a spanner which will, by its peculiarity, remind the engineer that care is necessary in the adjustment.

#### Scale Conferences at Pittsburgh.

The first conference between the few iron manufacturers at Pittsburgh who sign the wage scale of the Amalgamated Association of that organization was held in Pittsburgh on Wednesday afternoon, the 6th inst. The meeting was a preliminary one, the firms represented being Jones & Laughlins, Limited, the J. Painter & Sons Company and Lindsay & McCutcheon. A brief discussion took place over the terms of the scale, and the manufacturers gave an outline of the changes they desire to have made. It was then decided to hold another meeting at the same place on Wednesday, the 13th inst. President M. M. Garland of the Amalgamated Association has also arranged with John Jarrett of the Association of Iron and Steel Sheet Manufacturers for a conference to be held in Pittsburgh on Thursday, the 14th inst.

The next regular meeting of the Western Foundrymen's Association will take place on Wednesday evening, June 20, at 7.30 p.m., in room 702 Western Union Building, Jackson street, corner Clark street, Chicago. A paper by Thomas D. West entitled "Round vs. Square Test Bars," as printed in the official proceedings of the May meeting, will be read and discussed.

The report of the Commissioner of Labor states that there are in the United States 5838 building and loan associations, with 1,745,725 shareholders. The assets are placed at \$450,667,594, giving an average net asset per shareholder of less than \$260. Pennsylvania heads the list in the number of associations, having 1079, and Ohio stands second with 721. The report also shows that 314,775 homes have been acquired by stockholders; that the loans average \$1120, and that the total profits are \$80,664,116.

## The Mechanical Engineers

On Monday upward of 100 members of the American Society of Mechanical Engineers and their ladies started with a special train on the Vermont Central Railroad from New York for Montreal to attend the twenty-ninth meeting of that prosperous and progressive organization. Later a number of other members joined them, so that there was a large body to enjoy the hospitality of their Canadian friends. Among those in attendance were: Eckley B. Coxe of Drifton, Pa., president of the society; J. F. Holloway, New York; C. W. Hunt of New York; Washington Jones of Philadelphia, Pa.; N. C. Stiles of Middletown, Conn.; John Dick of Meadville, Pa.; Albert F. Hall, Boston; Prof. Gaetano Lanza, Boston; E. L. Ross, Indian Orchard, Mass.; J. B. Mayo, New York; G. M. Sinclair, Philadelphia; G. Beach, Gloversville, N. Y.; Joel Sharp, Salem, Ohio; F. H. Brewster, Birmingham, Conn.; F. A. Sheffield, New York; S. M. Snow, Providence, R. I.; D. Almy, Providence, R. I.; James J. McKee, Bethlehem, Pa.; H. C. Meyer, Jr., New York; F. M. Rites, Pittsburgh, Pa.; F. N. Lafarge, Walesburg, Conn.; E. S. McClellan, Pittsburgh; A. H. Blackburn, Matteawan, N. Y.; W. W. Bird, Cambridge, Mass.; W. Watson, Boston; D. N. Melvin, Staten Island, N. Y.; W. W. Christie, Paterson, N. J.; Daniel Ashworth, Pittsburgh, Pa.; G. W. Weeks, Clinton, Mass.; John Holland, Dover, N. H.; Jas. E. Tatnall, South Bethlehem, Pa.; F. H. Ball, New York; James McBride, Brooklyn; A. F. Knight, Manchester, N. H.; F. R. Hut-ton, New York; H. M. Marble, New York; Wm. Roberts, Waltham, Mass.; J. M. Hollis, Cambridge, Mass.; John Thomson, Neptune Meter Company, Brooklyn; R. H. Rice, Providence, R. I.; Olin Scott, Bennington, Vt.; A. W. Bur-chard, Danbury, Conn.; C. T. Longe-necker, New York; Fred. J. Miller, New York; A. K. Mansfield, Salem, Ohio; Gus C. Henning, New York; U. B. Roelker, New York; C. E. Hart, New Britain, Conn.; Henry Binsse, New York; G. H. Smith, Providence, R. I.; R. J. Gilmore, Providence, R. I.; W. B. Mason, Boston; J. Bur-kitt Webb, Stevens Institute, Hoboken, N. J.; William Wiley, New York; W. D. Forbes, Hoboken, N. J.; C. W. Baker, New York; C. H. Corbett, Continental Iron Works, Brooklyn; C. W. Nason, New York; C. M. Russell, Massillon, Ohio; B. H. Warren, Stamford, Conn.; C. C. King, New York; R. S. Brown, New Britain, Conn.; J. Humphrey, Keene, N. H.; D. S. Jacobus, Stevens Institute, Hoboken, N. J.; F. E. Galloupe, Lynn, Mass.; A. T. Brown, Syracuse, N. Y.; S. Hollingsworth, Boston; Louis Schutte, Philadelphia; G. R. Stetson, New Bedford, Mass.; W. U. Fairbairn, Boston; A. L. Merrill, Boston; Dr. Leonard Waldo, Bridgeport, Conn.; W. L. Cheney, Meriden, Conn.; D. G. Moore, Elizabeth, N. J.; L. S. Wright, J. H. Webster, Boston, Mass.; L. G. Engel, Brooklyn; C. H. Loring, Brooklyn; T. R. Almond, New York; E. A. Darling, New York; R. C. Veit, New York; V. E. Edwards, Worcester, Mass.; F. H. Hayward, New York; W. L. Simpson, Philadelphia; A. A. Cary, New York; W. D. Cadwell, Nashua, N. H.; C. D. McDuffie, Manchester, N. H.; C. E. Hyde, Bath, Maine; F. L. Hand, Philadelphia; J. M. Robinson, New York; C. O. Heggem, Massillon, Ohio; A. R. Gillis, Syracuse, N. Y.; Ambrose Swasey, Cleveland, Ohio; J. A. Brashear, Pittsburgh, Pa.; J. R.

Freeman, Winchester, Mass.; A. M. Goodale, Waltham, Mass.; D. W. Robb, Amherst, N. S.; H. W. Bulkley, New York; W. R. Roney, New York; W. S. Rogers, Troy, N. Y.; G. H. Barrus, Boston; C. J. Field, Brooklyn; J. R. Babbitt, Providence, R. I.; J. J. Flather, Lafayette, Ind.; G. J. Rockwood, C. Kirchhoff, New York; C. H. Manning, Manchester, N. H.

After spending a part of the afternoon driving to Mount Royal Park and visiting the Art Gallery, the members gathered for the formal opening session at Molson Hall, McGill University. There were addresses of welcome by J. O. Villeneuve, Mayor of Montreal; by Hon. Sir Donald A. Smith, Chancellor of the University; by Prof. H. T. Bovey, Dean of the faculty of Applied Science; and by Herbert Wallis, chairman of the local committee.

Eckley B. Coxe of Drifton, Pa., president of the society, responded and then delivered an address. From this address, on

#### Technical Education,

we take the following points:

It seems to me in the first place that the students, no matter what branch of engineering they take up, should be trained thoroughly in the elements of mathematics, physics, chemistry, mechanics, and in drawing; and under the head of drawing I do not mean simply making a handsome drawing, but I mean in the use of the brain as well as of the hand, so as to understand thoroughly the relative importance of the different elements that go to make up a good drawing.

The essential point in training a student, say in mathematics, is that he should be taught correctly and thoroughly those branches which it is pretended to teach him. If he takes up to the differential calculus he should be taught it as far as he goes thoroughly, so that he may understand it. There seems to be an idea in many schools that every engineer should be taken through the differential calculus, and that no one should be allowed to graduate without having mastered it. In fact, in many colleges, as a friend of mine expressed it, the differential calculus serves as a sort of screen which separates the wheat from the chaff—that is to say, those who pass satisfactorily in the calculus at a certain time, say at the end of the sophomore year, are allowed to go on and graduate, and those who do not are turned back. No one has more respect for the calculus than I have. In my student days and up to the present time it has been and is one of my pleasures to study and use it, but my experience in life has proved to me that many men who are not able to really understand it, much less to use it, have been and are engineers of the highest ability, ornaments to their profession and better fitted for certain lines of engineering work than others of much greater mathematical ability. On the other hand, I have known men to whom the calculus was an easy study, who went through it almost without work, and enjoyed it, and yet these same men were deficient in other qualities of mind which were absolutely essential for making a successful engineer.

There seems also to be an opinion among a portion of the community that practical training at a technical school in the machine shop and in the field is of great importance—in fact, of greater importance than the study of the fundamental principles of the profession. There is no doubt that the practical



training of the hand, the eye, and the practical study of the actual operations of machinery, boilers, &c., is of great value, but it is a waste of time to try to make the student a good machinist or a good transit man. He should be taught the practical processes by which the machine work is done, such as filing, lathe work, planer work, fitting up, &c.; but the time should not be taken from his studies to make him a good workman. He should not spend days in trying to acquire enough experience in surveying to be able to take charge of an engineer corps, for no one would give him such a position. When he graduates he might get the place of a rod man. If, before or after he graduates, he has time to go into a machine shop or to go into the field and do practical work, it will, of course, be of great value to him; but the point I make is that everything should be sacrificed to training the student thoroughly and fundamentally in those branches of natural science upon which the engineering profession stands. When that has been done their special application to civil, mining or mechanical engineering can be given him as far as the time allows; but to sacrifice the former in order to give him a certain facility in the practical work of any special profession is a waste of time. These things should be learned afterward in actual practice.

A second point which seems to me of importance is the business training of an engineer. He should have some knowledge of business methods and of bookkeeping; he should understand the importance of knowing the cost of a thing and the causes of such cost and the methods by which it can be determined; he should realize that no expenditure, however valuable the results that may be obtained from it, should be made unless the money for it can be provided without crippling other branches of the business; and he should know that it is not good engineering, that it is not good business, to let a contract at a price which he feels sure is below the actual cost of doing the work, for, except in rare cases, one of two results will follow: Either the work will be slighted, or the contract will be abandoned, both of which may occasion a great loss. I cannot be too emphatic in regard to this.

The engineering student should be taught the absolute necessity of accuracy of observation, accuracy of statement and accuracy of reasoning. He should be particularly cautious if superficial observation seems to show that the results are as hoped for. When things do not turn out as we wish we are very likely to examine every detail with the greatest care; but when they seem to be as we desire we are not always so particular. Where an engineer has the slightest doubt as to the result that he has obtained, or the conclusion that he has arrived at, he should state these doubts with great fullness and as specifically as possible when making a report.

The technical school should be like any other great engineering establishment. It should aim to obtain with the material at its command a product which should have the greatest total value. It should not try to turn out a few very brilliant men, while the great majority of the students are either dropped or imperfectly educated. Of course, a school, like the blast furnace or rolling mill, should endeavor to get the best raw material that can be had in sufficient quantities and at a reasonable price and it should furnish a product of the greatest value in the markets to which it has access.

It seems to me, therefore—and I express my opinion with a great deal of diffidence—that the technical school should strive to produce rather well trained, all around men than specialists; that is, to allow nothing to interfere with giving students a thorough training in all those branches which form the ground work of all engineering, and that the training in each branch should be so arranged that the student should be equally well grounded in all.

The students, under these circumstances, could enter almost any establishment and very soon make themselves very useful men by further training, instead of being specialists, who, if they should not obtain employment in their specialty, would be practically of no more value than untrained men.

The faculty of a technical school should also consider very carefully the condition of life from which its students are mostly drawn, and the occupations or positions which their students will be most likely to fill after they graduated.

The first session was opened on Wednesday morning with a paper by A. K. Mansfield of Salem, Ohio, entitled "Notes on the Theory of Shaft Governors," which was followed by a paper on "Heat Units and Specifications for Pumping Engines," by Albert F. Hall of Boston, Mass. We have printed in a recent issue an abstract of the paper by W. H. Bristol on "A New Recording Pressure Gauge for Extremely High Ranges of Pressures." After some discussion the contribution by Frank Richards of New York was read, entitled:

#### A Note on Compressed Air.

The writer first called attention to the fact that if a piston moves freely in a cylinder the volume varies inversely as the pressure. But in practice it is found that while the air is being compressed the operation of compression also heats it, and its volume is consequently considerably greater than it should be upon the assumption that the volume is always inversely as the pressure.

Concerning the air compressor of the present day the writer says in part: "By the way in which it is possible to connect the air compressing cylinder with the steam engine in the best air compressors of the present day, the entire friction of the air compressing apparatus is so compensated for by the saving of friction in the engine that it is not only reduced to zero but it becomes a negative quantity of considerable magnitude. This may be proved by incontrovertible evidence. It is natural enough to suppose that the operating of the air piston puts just so much additional friction upon the engine, with a call for so much more power to overcome it. But the arrangement of the air piston in a straight line and upon the same rod with the steam piston saves enough from the friction of the engine proper to more than compensate for the friction of the air piston, and the operating of the air piston costs practically 'less than nothing.'

"The losses due to the friction of the ordinary stationary steam engine usually amount to 10 or 12 per cent. of the indicated horse-power. In an Ingersoll-Sergeant air compressor exhibited at Chicago, with engines of the Corliss type, the mean friction, as determined by Professor Jacobus, was 5 per cent., so that, crediting the saving of friction to the air cylinders, the friction cost for operating them was — 5 to — 7 per cent.

"After the air has been compressed, and before it is put to use, it is usually transmitted through pipes for some distance, and the friction of the air in its passage through the pipe naturally causes some loss of pressure. With pipes of proper size and in good condition air may be transmitted, say, 10 miles, with a loss of pressure of less than 1 pound per mile. If the air were at 80 pounds gauge or 95 pounds absolute upon entering the pipe, and 70 pounds gauge or 85 pounds absolute at the other end, there would be a loss of a little more than 10 per cent. in absolute pressure, but at the same time there would be an increase of volume of 11 per cent. to compensate for the loss of pressure, and the loss of available power would be less than 3 per cent. This illustration is only offered as a simple and convenient one and not as a sample of the best practice. With higher pressures still more favorable results could be shown." The latter part of the paper examines very briefly some of the uses to which compressed air may be put.

The session was closed with the reading of a paper by A. W. Robinson, on "The Relation of the Drawing Office to the Shop in Manufacturing." We print elsewhere an abstract of this paper.

On Wednesday afternoon the party made a trip down the Lachine Rapids, and in the evening was tendered a reception at the residence of Sir Donald A. Smith.

On Thursday morning the session was opened by the reading of an abstract of a lengthy paper by Prof. R. H. Thurston of Sibley College, Ithaca, N. Y., entitled "The Theory of the Steam Jacket." Professor Thurston has collected data, tabulated them and has plotted the curves of probable efficiency and performance of compound jacketed engines, comparing an ideal and a real engine. He says: "It will be seen that the efficiencies range from 16.7 per cent. to 18.2 per cent. in the case of the non-condensing, and from 16.9 per cent. to 22 per cent. for the condensing engine, the maximum being found at a ratio of expansion, in the first case, of about 10 per cent., and in the second of about 30 per cent. Beyond these ratios the terminal pressure falls below the back pressure, and a waste follows, instead of gain, by further expansion."

R. S. Hale noted that Professor Thurston does not touch upon the question of omitting one or more jackets from a compound engine. In jacketing receivers it seems to have been forgotten that the use of the jacket is chiefly to prevent initial condensation, which does not or should not occur in a receiver to any marked degree.

Albert F. Hall called attention to the fact that the Pawtucket pumping engine with which Professor Denton made his experiments cannot be run without steam jacketing, since the jackets of the heads of neither high nor low pressure cylinders can be thrown out of action.

G. J. Rockwood of Worcester, Mass., made a sharp protest against the paper and its conclusions. He insisted that it contained no new points and was hardly necessary. He urged that it took no account of the experiments of Peter Willans and others in Europe, and of Professor Denton and his school in this country. He denied the statement made by Professor Thurston in his paper that there is substantial unanimity of opinion among authorities on the subject.

Prof. D. S. Jacobus of Stevens Institute presented a paper entitled:

**"Results of Experiments with a 50 Horse-power Single Non-condensing Ball & Wood Engine, to Determine the Influence of Compression on the Water Consumption."**

In the paper presented by Mr. Ball at the Chicago meeting, a theory was advanced in regard to the probable effect of compression on the economy of the steam engine, and a law was suggested for determining the most economical compression curve. Since that meeting an opportunity has been afforded, at the Stevens Institute of Technology, for investigating this subject by experiment, and the paper is a record of the facts thus obtained. The experiments prove that for either equal amounts of work produced or for equal points of cut off the cushion steam in an engine should not be compressed as high as the initial pressure but to some lower pressure in order to obtain the best economy, thus verifying conclusions arrived at by theory in the paper referred to.

The results obtained are as follows:

With a special valve in the engine, so arranged as to compress the cushion steam to the initial pressure and cut off at one quarter stroke, the steam consumption was 37.9 pounds per hour per horse-power. For the same work as with the special valve, and compression to two-thirds the initial pressure, the steam consumption was 36.8 pounds per hour per horse power. For the same cut off as the special valve, and compression to about five-eighths the initial pressure, the steam consumption was 34.8 pounds per hour per horse-power. The cylinder dimensions were: Bore, 10 inches; stroke, 11 inches. The steam pressure averaged about 72 pounds above the atmosphere, and the revolutions 250 per minute.

The results of the test are presented in tabular form.

J. H. Barr of Sibley College referred to experiments made there which indicated that the cylinder condensation may be reduced by compression, but that in the experiments made the compression may have been carried too far to secure a net gain in economy.

The paper by Frank H. Ball of the Ball & Wood Engine Company, on

**"Cylinder Proportions for Compound Engines Determined by their Free Expansion Losses,"**

was presented in fulfillment of a promise made at the International Engineering Congress, where the author read a paper in which a theory was elaborated for measuring and harmonizing the free expansion losses at both ends of the diagram. In the paper referred to it was also suggested that this system of measurement might furnish valuable information as to the relative losses from free expansion in the several cylinders of compound engines.

In offering this paper the author is aware that he is widening the application of a law suggested in the former paper, which law was not as generally accepted as had been anticipated. This skepticism on the part of some of our leading members fortunately led to a series of experiments, since conducted at the Stevens Institute of Technology, which experiments are the subject of a paper presented at this meeting of the society by Professor Jacobus, who conducted the experimental work. The results as reported seem to confirm the law in question, and it is therefore

with greater confidence that its further application is here made.

To make this application let it be assumed that cylinders are to be selected for a triple expansion engine where the boiler pressure is 150 pounds above atmosphere and the vacuum gauge shows 26 inches. Allowing for wire drawing, let it be assumed that the initial pressure in the high cylinder will be 160 pounds absolute, and the back pressure in the low cylinder 3 pounds absolute. The total range of pressure is, therefore, 157 pounds, and the corresponding range of temperature 221° F.

The object of a compound engine being to reduce cylinder condensation by dividing the range of temperature judiciously between two or more cylinders, the first step is to decide through what range of temperature each cylinder shall work. In doing this the desirability of a tolerably uniform division of work between the various cylinders forming the system must not be overlooked, although it cannot be considered good engineering to impair the economy of the engine materially to accomplish this result, as each engine of the system may be built to carry any load found desirable to put upon it. If the range of temperature is divided equally between the three cylinders in the proposed engine, the greater internal surface of the low cylinder would warrant the expectation of greater cylinder condensation than in the smaller cylinder, and if so, the total condensation can be reduced by giving the low pressure cylinder less range of temperature and the high cylinder more.

Cylinder condensation in this investigation, whether considered relatively or collectively, must be made to include the steam consumed in the jackets of each cylinder, if jackets are used. Whatever may be true in regard to the best range of temperature for each cylinder, the logic of what is to follow will apply with equal force, and therefore, for the purpose of illustration, it will be assumed that the temperature is to be equally divided. This will require that the high cylinder works between 160 pounds absolute and 57 pounds, the intermediate between 57 and 16 pounds, and the low cylinder between 16 pounds and 3 pounds absolute pressure.

Mr. Ball then proceeds to determine the best point of cut off for each cylinder. In this investigation each cylinder is considered separately and treated as though it were a single cylinder engine working between the limits of pressure indicated, and "it may be asserted without fear of successful contradiction that if any cylinder of a compound engine is not realizing the highest economy obtainable from a single cylinder engine working between its limiting pressures, then the engine as a whole is falling short of its possibilities. It is also true that if because of cylinder condensation it is not economy to expand to the line of back pressure in a single cylinder engine, the same is true of every cylinder of a compound engine, it being only a question of the degree of free expansion permissible in each case."

Having established the expansion curves it is desired to produce in each cylinder, the next step is to ascertain the ratio of cylinders which will produce these diagrams. A convenient graphical method of doing this is then described. By this method it is found that the ratio of high to intermediate is 3.3, and of intermediate to low 4, and consequently of high to low of 13.2. The general conclusions are:

1. That in current engineering too few expansions are obtained in compound engines for best economy.

2. That with 150 pounds pressure and a good vacuum at least 32 expansions should be realized in a triple expansion engine.

3. That the cylinder ratios ordinarily used are too small, because they give too little "terminal drop" for best economy.

4. That too little attention is given to the compression curve, which should be determined by the expansion curve, and should never reach initial pressure.

Professor D. I. Jacobus of Hoboken admitted that there is not a sufficient accumulation of data to proceed with certainty. The high back pressure in the high pressure cylinder of a triple engine brings in an element which makes the case different from that of an engine exhausting against atmospheric pressure, so that it cannot be said that the drop at the end of expansion shall be the same as for an engine working under the latter set of conditions. Again, in a triple engine, where there is no drop at the end of the expansion lines in the high and intermediate cylinders, the points of cut off in these cylinders occur at a later point in the stroke than that which has been found by tests to give the best economy for atmospheric back pressure. Mr. Ball, therefore, adheres to one condition found to be economical when an engine exhausts against the atmosphere, but departs from the other conditions, so that no definite conclusion should be drawn.

It is a fact that in some triple engines the best results are obtained with a load that produces considerable drop in the high and intermediate cylinders. This does not, however, prove that such a distribution is desirable, for it may be possible to employ another engine to do the same work with a greater economy.

F. M. Rites of Pittsburgh next came forward with a paper entitled

**"A New Method of Compound Steam Distribution."**

He referred to the report made by a committee of the National Electric Light Association in which it was shown that the work done at the Chelsea Jute Mills, at Brooklyn, where an engine indicating 653.3 horse-power developed a horse power from a coal consumption of 1482 pounds, was double that of the most favorable report given to the committee, more than double that of the next best report, 13 times the efficiency of the plant making the lowest report and between four and five times the average efficiency of the whole report, covering a number of engines in electric light stations.

Mr. Rites says: "There seems to be but one general explanation applicable to electric light or railway stations which can account with any degree of probability for such extravagant fuel consumption, and that is the excessive wastefulness of the steam engine under varying conditions of load.

"With the small clearances of the average Corliss engine there is little left for the single cylinder except the proper variation of the cut off to suit the load, and with the same grade of high speed engine, with its comparatively greater clearance, little more can be expected than a simultaneous variation of all the functions of the steam distribution, after the manner generally adopted. For a multiple expansion engine, however, the customer pays a much higher price and has the right to expect reasonably good results in fuel



economy, which, however, he seldom gets in the electric industries.

"It is so generally known as to require no demonstration here that the cause of the increased efficiency of the multiple expansion engine lies in the reduction of cylinder condensation through a proper division of the range of temperature between the cylinders. Hence it is evident that the efficiency can be maintained only with a constancy of the division of the temperature. That this is seldom done is shown by the indications of the receiver gauges of the average multiple cylinder engine in electric power service, where the vacuum frequently passes back through a second receiver."

Mr. Rites proposes a method for obtaining greater efficiency with varying loads. It consists in a simultaneous variation of all the valve functions in the same direction, but with different degree and period, and with particular reference to the position of the line in the indicator diagram, which is the line of division of temperature. Also, that although an exact compression to initial pressure is usually unavailable, except at a single position of governor adjustment, yet the greatest departure from such a degree which is resultant on this method is immaterial and is advisable for its beneficial reaction on the position of the line of division of temperature.

With a governor controlling all the valve functions the range of variation of high pressure cut off is reduced to a minimum, for the areas of the cards are varied in all directions at once, and incidentally the danger of an engine running away with a light load is avoided.

Jesse M. Smith of Detroit, Mich., presented some data on tests of the small electric railway plant of the Wyandotte & Detroit River Railroad running from Detroit to Trenton, Mich. It has two tandem compound condensing engines made by the Phoenix Iron Works, Meadville, Pa., two Manning vertical boilers, one fired with crude oil and the other with coal to supply steam for the fuel atomizer of the other. The test showed that the steam consumption per hour per horse-power was 24.55 pounds, the pressure averaging 111.8 pounds. The percentage of steam used by the fuel jet was 14.5 per cent. The fuel oil used per horse-power per hour for the engine was 0.29 gallon, or 1.9 pounds. The amount of fuel oil required to evaporate 1000 pounds of water from 126.6° F. into steam of 112 pounds pressure was 11.79 gallons, and the water evaporated from 126.6° F. into steam of 112 pounds pressure was 84.81 pounds per gallon of fuel oil. Mr. Smith says in conclusion: "While this is a condensing engine, the high pressure cylinder does a good share of the work even on the lightest loads, and the receiver pressure does not vary greatly either during a single revolution or during a change of load of from 21 to 101.8 horse-power. While the load changes 485 per cent., the average receiver pressure only changes 167 per cent., and even when the engine ran with the belt off and developed 92 horse-power there was no negative work in either end of either cylinder. These results, which I believe to be highly important both for economy and close regulation, are due to the valves of both cylinders being controlled by the governor."

The last paper of the session was a lengthy contribution by W. S. Aldrich of Morgantown, W. Va., entitled "Power Losses in the Transmission

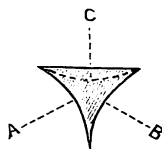
Machinery of Central Stations." Among others, he gives the following data concerning the power losses of the plant of the Druid Hill Cable Company, at Baltimore, showing that the efficiency of the rope drive transmission from the engine shaft to the main shaft clutch couplings was 91.3 per cent., and that of the cable plant from the indicated horse-power of the engine to the power available at the cars was 36.90 per cent. Tests are also recorded to determine the loss in transmitting power through a countershaft of a dynamo. A comparison was made between the performance when the dynamometer pulleys were bare cast iron and when they were covered with Shultz leather covering. With the former the horse-power test in the transmission machinery was 1.347 horse-power, or 8.10 per cent., with mean indicated horse-power of 19.122. With the latter it was 0.710 horse power, or 6.65 per cent.

The session closed with a somewhat rambling discussion on tempering and hardening steel.

After the meeting the members assembled for luncheon at the power house of the Montreal Street Railway Company, and afterward visited the shops of the Grand Trunk Railway at Point St. Charles. In the afternoon the members and their ladies accepted an invitation to a garden party at the residences of Mrs. Redpath and Mrs. Bovey.

#### Molders' Leather Fillet.

The engraving here presented represents a new form of leather fillet made by the Diamond Clamp & Flask Works



Molders' Leather Fillet.

of Richmond, Ind. The sides of A B are cut curving, as shown, instead of straight. When the point at the intersection of the lines A B is forced into a square corner the side C assumes a curve, as indicated by the dotted line. This construction saves the time of cutting and preserves the surface of the leather, the exposed side C being the hair side.

The Fire Island Light, one of the most important beacons on the coast, is about to be improved by the substitution of electricity for oil in its illumination. The new light that is to be installed is said to have the power of 25,000,000 candles. It was exhibited at the World's Fair, where it was known as the "lightning light." It has a bivalve lens. The two sides are about 9 feet in diameter. Each lens is made up of many crystal prisms set in a net-work of brass, the prisms concentrating the light on a crystal disk in the center. The lighthouse on Fire Island is 168 feet high, and it is estimated that the new light will be seen for 25 miles. It will be the greatest light on the coast of this continent.

The Emlyn Steel & Tin Plate Company, Summitville, Ind., are reported to be progressing satisfactorily with the buildings for their tin plate plant, which will, when complete, have a capacity of 150,000 boxes annually.

#### Apparatus for Electric Welding.

Letters patent for an apparatus for electric welding embodying several new and novel features have been issued to Rudolph M. Hunter, and been assigned to the Johnson Company of Johnstown, Pa. The particular construction employed as an example of the use of the apparatus is that in which it is used for the manufacture of steel rails wherein the feet or chairs are welded to the webs of the girder rail so as to give it additional height and a self supporting base. This rail construction is well known and has been manufactured by other methods of welding the two parts together. In the processes heretofore used for electrically welding the feet to the web of a girder rail, there was employed apparatus in which the two parts were firmly gripped in suitable jaws, the parts pressed together, and an alternating current of great volume caused to pass through the parts in contact so as to cause the metal to fuse and weld together.

In carrying out the present invention the two parts of the metal to be welded are brought in firm contact and submerged in a liquid, preferably acidulated water. While so immersed a continuous electric current from an electrode in contact with the liquid is passed through the metal parts to be united and back to the source of electrical energy, the liquid being employed as a conductor for the current. In practice the positive current is delivered to the electrode submerged in the liquid and the negative current is delivered to the parts of the metal to be welded. The action of the current causes the decomposition of the liquid, generating gases adjacent to the metal parts in contact to be welded, and this produces such reactions that the portions of the metal in contact with the liquid are instantly brought to a welding heat. In this method of welding a considerably more intense current or one of greater tension is required than in the alternating system before referred to, and the current is preferably continuous in its nature or what is known as a continuous current as distinguished from an alternating current. It might be a pulsating or intermittent current if desired. When the two parts of the metal in contact are fused or brought to a welding heat they instantly unite, forming an integral structure; and this joint may be further strengthened by having the parts which are welded subjected to pressure performed by hydraulic, gravity or steam devices.

In this particular device a traveling support or carriage is provided for the girder rail and suitable clamps carried by the carriage for the feet, whereby the latter may be adjusted in position with respect to the rail while it is held on the carriage. At one place adjacent to the rails or bed upon which the carriage moves the joint between the foot portions and the girder rail is surrounded by a suitable hollow frame through which a liquid is caused to flow to submerge the parts in contact during the electric welding operation. After the welding has been performed the liquid is lowered, the hollow frame is separated, and the rail with its welded foot is moved along to be brought under a hammer or compression device. Simultaneously with the foregoing operation a second foot, previously clamped in position upon the rail, is brought into position so as to be held in the hollow frame and subjected in its turn to the welding operation. By this means

the welding and forging or compression operations may be carried on simultaneously but successively with respect to a single part operated on.

### Crane Company's New Valves.

The Crane Company of Chicago and New York have recently brought out some new valves, two of which are here-

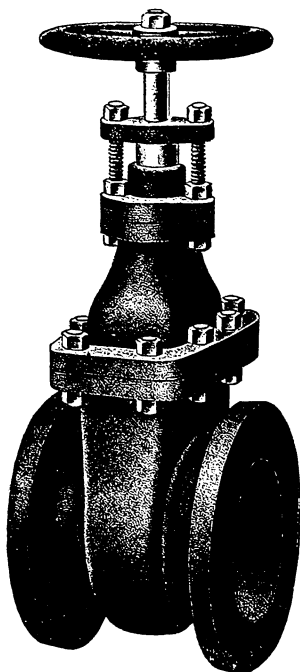


Fig. 1.—The Crane Wedge Gate Straight Way Valve.

with illustrated. Fig. 1 is a wedge gate straight way valve, designed for ordinary pressure, for either steam or water, and made in all sizes from 2 to 24 inches. The gate is guided in the body by ribs, which insure true and

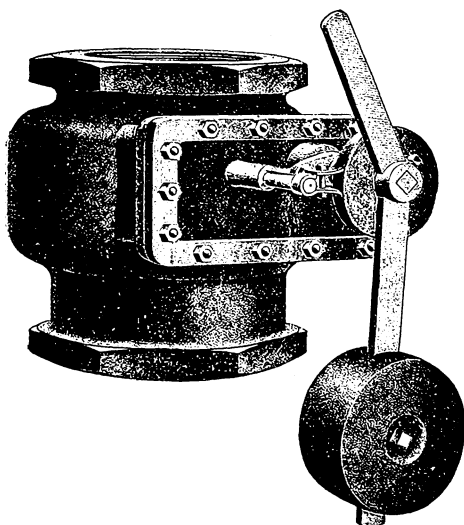


Fig. 2.—The Crane Noiseless Back Pressure Valve.

easy movement and prevent wear of the faces as well as prevent the disks from touching the seats of the body of the valves except at the point of closing. The seats in the body of the valves and the faces of the disk are made of bronze metal. These valves are furnished with either screwed, flanged or hub ends, with stationary stem, with outside screw

and yoke, with bevel and spur gearing, with gearing and by-pass relief and with indicator. The manufacturers claim many points of advantage for this style of construction and have applied for patent.

Fig. 2 illustrates Crane's patent noiseless back pressure valve for condensing and non-condensing engines. It is constructed with a piston having ports around its sides, the combined areas of which are greatly in excess of that of the pipe. This piston is accurately fitted to the body of the valve, in which it slides freely. When pressure is brought against the under side of the piston it rises, opening the ports just sufficient to let the steam escape, and at the same time it maintains the pressure for which it is set. It has no seat. The opening and closing of the valve are regulated entirely by the weight. This valve was designed to overcome the objectionable and destructive hammering peculiar to the common back pressure valve. Complicated adjustments were avoided, so that it is not liable to get out of order.

### Influence of Electric Light on Plants.

An interesting series of experiments made by the Hon. W. W. Rawson of Arlington, England, to determine the influence of the electric light upon the growth of plants, are mentioned by *Invention*, a London journal. Mr. Rawson claims, as the result of his trials, that he gains five days in each of his three crops of lettuce—that is, two weeks in a season—by using the electric light in his greenhouses. He states, further, that the gain on one crop pays all the expenses of the electric lighting for the season, thus giving him the gain on the other two as clear profit. His attention was, we learn, first called to the usefulness of the light by the advance made in the growth at the ends of his greenhouse next the street and in the glare of an electric lamp. This was so marked that he introduced the light throughout his lettuce and cucumber houses with the most satisfactory results. Mr. Bailly, another English experimenter in this line, states as the result of his own tests that the influence of the light is greatly modified by the interposition of a glass roof. Plants injured by a naked light were benefited by the protected light. He found that five hours' light per night at a distance of 12 feet hastened the maturity of vegetables a week or ten days, although it proved injurious to young plants.

Taking effect on Monday, June 11, 1894, the rate on coke in carload lots, 24,000 pounds and over, from the Connellsville region to Titusville, Pa., will be \$2 per ton of 2000 pounds. The rate on coke from the Connellsville region to Cherry Creek, Conewanga, Markhams and Pine Valley, N. Y., has been fixed at \$2 per ton of 2000 pounds, while the rate to Chagrin Falls, Ohio, will be \$1.65 per ton of 2000 pounds.

Southwest Louisiana is described as showing a remarkable development of late years. What ten years ago was little more than a wilderness is now becoming the most important rice region on the continent. In 1884, 250 cars of rice were shipped from this section, while more than 10,000 cars were shipped last year. The country is said to be fast filling up with farmers from the Northwestern States, and is admirably adapted for cattle raising, and the growing of sugar cane and fruits.

### The Relation of the Drawing Office to the Shop in Manufacturing \*

The system described by A. W. Robinson is that employed in the drawing office of his own company. As it is not supposed to be of universal application, the conditions which it is intended to meet are described. It is assumed that the office employs from 10 to 15 skilled draftsmen and is in connection with a manufacturing establishment doing a general engineering business in which there is comparatively little duplication of orders, and in which single orders frequently involve a large amount of detail of which it is essential to keep exact records. It is also assumed that the drawing office is invested with the sole right and authority to issue orders to the shop for all new work, or all work in which there are changes and variations from previous similar work.

#### Shop Orders.

An order being once entered on the books of the company, the procedure is as follows: The business office issues a written order to both the drawing office and the shop upon a blank which merely states the general name of the machine, the time of delivery promised, and the number of specifications to be worked to, if any, and the number by which the order is to be known. It is the duty of the drawing office to prepare such specifications beforehand when necessary. On the receipt of these orders in the shop, if it be a repair or duplicate of something already made, so that the shop superintendent has the information by which to execute it, he does so. If, however, it is new, or in any sense special work, he cannot proceed until the orders come down from the drawing office.

The drawing office issues orders upon the pattern shop and foundry by means of blanks headed "foundry" or "pattern shop," as the case may be, arranged thus:

#### B. S. S. & D. CO. ENGINEERING DEPARTMENT.

##### FOUNDRY ORDER.

Order No.	Date.	Draftsman.
	189	

Countersigned by \_\_\_\_\_ Examined by \_\_\_\_\_

These are manifolded in triplicate, and can be made out by any draftsman to whom the job is delegated, but must be signed by the chief engineer, or in his absence the chief draftsman. The two copies are then sent down to the shop superintendent's office, who keeps one on file for his own reference and information, and immediately sends the other to the foreman of the department for which it is intended. In this way the shop superintendent retains control of his men in the different departments, and has knowledge of the orders that are issued. He alone is responsible for their proper execution, and undue interference of the draftsman with the foremen or workmen is obviated.

\* Abstract of paper presented by A. W. Robinson of the Bucyrus Steam Shovel & Dredge Company at the Montreal meeting of the American Society of Mechanical Engineers.

It is also the duty of the drawing office to order all raw material for new and special work that is not regularly kept in stock. This is done by blank as follows:

B. S. S. & D. CO. ENGINEERING DEPARTMENT.

Date.	Please order the following
189	for Order No.
Ship	
Draftsman	Consigned, Chief Engineer.

These are simply requisitions on the business office, and the copy goes to the storekeeper as a statement that the articles noted have been this day ordered. He will, therefore, be expecting them, and on their receipt will at once know for what order they are intended. His copy of the manifold reads: "The following material has this day been ordered for order No. —."

Written orders are not issued from the drawing office to any other departments except the pattern shop and foundry. Drawings and sketch sheets are issued to the other departments, as machine, smith and erecting shops, &c. These pass through the hands of the shop superintendent, and in themselves constitute an order to make what they represent or call for, provided they are covered by the original general order from the business office and bear the same order number.

By means of these written orders to each department, each foreman knows definitely what work he has on hand, and all responsibility for errors or delinquencies is at once traceable to the culprit.

The shop superintendent is also empowered to issue written orders to his foremen in all departments for all work which does not require information from or the authority of the drawing office. For these he uses his own blanks—those of the drawing office being labeled "Engineering Department."

When the drawing office work on the order is completed an order list is made out and typewritten in duplicate. The order list enumerates in detail all the items making up the complete order, and is divided up into headings, such as (one) castings, (two) forgings, (three) miscellaneous, (four) special material ordered outside, and so on. For each item is given a reference number of the drawing or sketch sheet on which it is shown, and it is or should be shown thereon so fully and definitely that no further questions need be asked. This order list is essential: 1. To inform the shop definitely of what the work consists. 2. To refer the shop to a source of information concerning each and every item. 3. To form a shipping list so that in shipment nothing will be overlooked that should be sent. 4. To form a permanent record by which repairs may be readily identified and from which future machines may be compiled or adapted. These order lists are press copied in a book for the purpose.

#### Drawing Office Rules.

1. All drawings shall be of the uniform size of 23 x 36 inches.
2. All detail drawings for use in the shop shall consist of whole standard

sheets, half standard sheets and sketch sheets. Half sheets shall be 18 x 23 inches, formed by ruling a line across the center of standard size sheets as filed, the blue prints only to be cut and mounted and varnished when necessary.

3. The sketch sheets shall be 8 x 11 inches, and shall be used for all simple details, forgings, for bolt lists, and for all temporary work capable of being shown in this way. All standard machines shall be fully drawn out and blue printed. The sketch sheets shall be made with indelible pencil or copying ink and press copied in the book for the purpose. The information on the sketch sheets shall be as complete as that specified for drawings.

4. A shop drawing is to be considered as an order or instructions to the shop, and not merely as a statement or illustration. For this purpose it must convey clearly all the information needed to make and finish the article.

5. Every dimension necessary to the execution of the work is to be clearly stated by figures on the drawing, so that no measurement need be taken in the shop by scale. All measurements to be given with reference to the base or starting point from which the work should be laid out. In comparatively simple constructions the several parts are to be shown together complete, although each part must be figured independently, and details supplied, if necessary, by sketch sheet. In more complicated forms each part should be detailed by itself and a general drawing made showing the thing complete. No details should be sent out without putting them together on a drawing, or taking them from a general drawing, so as to insure their fitness. Unnecessary duplication of views to be avoided, except in display or advertising drawings.

6. All figured dimensions on drawings to be plain, round vertical figures, not less than  $\frac{1}{4}$  inch high, and formed by a line of uniform width and sufficiently heavy to insure printing well. No thin, sloping, or doubtful figures or diagonal barred fractions will be tolerated. All figured dimensions below 3 feet to be expressed in inches.

7. All center lines to be alternate dot and dash in fine black line. All dimension lines to be in continuous red lines, with a central space for the figure, and of such strength as to show on blue print more faintly than lines of drawing. Lines of drawing to be bold and clearly defined in proportion to the scale, and to be shade lined by making the right hand and bottom lines heavier. No ornamental shading or other "frills" allowed on shop drawings.

8. Every drawing, whether whole or half sheet, shall have the title, date, scale and number of the sheet placed in lower right hand corner. One man will be detailed for this duty, to secure uniformity.

9. The name of the drawing, as given in the title, is invariably to consist of two divisions in one line separated by a hyphen. The first division is to state the general name of the thing or machine, and the second division is to clearly designate the part or parts represented (or if a general view, should so state). The wording of the titles should be submitted to the chief engineer or head draftsman for approval.

10. Detail shop drawings should state:

a. The pattern number of every casting in plain figures of larger size than the dimension figures.

b. The number of each piece required

for one set. This should be written in one word (not figures) and followed by symbol of material.

c. The material of which the parts so ordered are made, using symbols as follows:

C. I.—Cast Iron.  
W. I.—Wrought Iron.  
C. S.—Cast Steel.  
M. S.—Machinery Steel.  
H. S.—Hammered Steel.  
Bs.—Brass.  
Bz.—Bronze.  
Bbt.—Babbitt.  
V. F.—Vulcanized Fiber.  
C. R. S. Cold Rolled Steel.  
Other materials write full name.

d. The kind of finish on each of the different parts will be indicated by a letter preceding the figured dimensions, as follows:

F. means "Finish," and indicates that the surfaces to which it applies are to be machined or dressed in suitable manner to size stated.

F. B means "Finished Bright," or polished.

G. F. means "Grinding Finish," and indicates that the only finish to be allowed is that necessary for grinding.

When no letter precedes the figured dimension it is understood that the part is to be left black or rough. In cases where finish might be presumed but not required, follow the figured dimension by the word "Cast" if a casting, and "Rough" if a forging.

e. A reference list of sketch sheets that may be used for detail illustrations.

11. Each draftsman will be supplied with a sketch book by the company and in which he shall make all his notes, calculations and data referring to his work, and under no circumstances shall original work be done on loose sheets and transcribed into these books. No effort should be made at neatness or nicety in these books, but each entry should invariably be commenced with the name of the thing and the date, and full notes made of data on which the calculations were based, and the results obtained clearly stated. These books are to be the property of the company.

12. An index book for drawings will be kept in the drawing office by the clerk. This book will be divided into as many divisions as there are drawers, with provision for indexing 100 drawings in each drawer. The names of the drawings will be added to the various divisions according to their classification. The system of numbering shall be as follows:

13. Each drawer shall be numbered consecutively and shall contain drawings devoted to a certain class of work, which shall be indicated on the drawer label. The drawing number shall consist of two or more digits with a decimal point between them. The whole number shall indicate the number of the drawer, and the figures after the decimal point shall indicate the serial number of the drawing in that drawer. For example: Drawing No. 5 16 is the sixteenth sheet in drawer No. 5, and drawing No. 75.96 is the ninety-sixth sheet in drawer No. 75. Not more than 99 drawings shall be put in one drawer, except in exceptional cases.

14. Sketch sheets will bear the number of the letter and page of the letter book, preceded by the letter S, to distinguish them from drawings, and will be indexed in their own impression book, but not in the drawing index book. They will be referred to on general drawing of which they are details, and will also bear the number of such drawing.

15. When making a new drawing the draftsman will apply to the clerk for a number, and will be allotted the first unappropriated number in the division to which the drawing will belong.

16. On completion of every drawing or sketch sheet it must be examined and initialed by the engineer before being issued and the following entries made in books kept for the purpose:

a. Record of blue prints and sketch sheets issued to shop, giving date, number and title.

b. Drawing index.—Record in day book the number, title and sub title, draftsman and date.

c. Pattern index.—Record in day book the number, classification and correct name of patterns, with remarks and date.

Each draftsman will see that these entries are properly made.

17. All patterns shall be numbered with the number of the drawing from which they are first made, followed by a letter indicating its serial on that drawing. For example, if four patterns are shown in detail on drawing No 36.50, the patterns shall be numbered 36.50A, 36.50B, 36.50C, 36.50D. When existing patterns are utilized in a new design or machine, their original number is to be noted on the drawing on which they are shown in their new employment.

18. Upon receiving formal notice from the pattern shop that patterns are ready for inspection, the draftsman connected with the order shall examine same and issue foundry order for the casting. The date of inspection and name of inspector shall be entered upon the pattern maker's report at the time of making such inspection.

The sketch sheets referred to in these rules are 8 x 11 inches in size. They are of stiff cardboard, and the heading is printed in copying ink. The sketch is made with an aniline copying pencil, the Eagle No. 2 in wood being used. They are press copied in books for the purpose, and several books are used for different classifications of work. The books are of slightly heavier tissue paper than is commonly used for correspondence, and have 500 leaves each, numbered consecutively throughout the series, so that the number of a sketch sheet is never duplicated. In this system there are six books for copying sketch sheets, representing as many classes of work, and these divisions will readily suggest themselves as required for any particular case.

The use of these sketch sheets is especially for work which does not require to be often duplicated, and for giving quick dispatch to emergency work. A freehand sketch can be made, copied, and issued in this way in ten minutes, while the regular process of drawing, tracing, blue printing, and waiting for the latter to dry, or the sun to shine, may consume hours. They have the additional advantage of being more convenient to handle and file away in the shop than blue prints, and they save multiplication of tracings and consequent drawer space. The copies being in book form cannot be lost and are easily indexed and consulted.

In addition to the stiff card sketch sheet it is convenient to have a "Drawing Office Memorandum" blank. This is a copying ink heading printed on a sheet of letter paper, and is used for order lists and all sketch matter sent abroad from the drawing office.

As a rule each draftsman makes his own tracings, and only skilled draftsmen are employed. The writer does

not advocate the employment of cheap draftsmen to trace shop drawings from the originals of the designer. If this is done the designer must finish his original to entire completeness before turning it over to the tracer, thus consuming additional time and running more risk of errors and omissions than if he traced it himself. A skillful draftsman will merely block out his entire work on the original and give his whole thought to the perfection of his design. In the tracing he can rearrange his drawing if necessary, and the time occupied in tracing is usually much less than that employed in working out and perfecting the design, and a draftsman worth \$120 per month will usually trace twice as fast as one worth \$60 and do it better.

The titles on drawings are mainly done by rubber stamps, giving the name of the company, the number of the drawing, and having spaces for the insertion of name, date and scale.

Some experimenting was done to find a suitable stamp ink for tracing cloth. Printers' ink was tried, but it rubs off and does not dry satisfactorily. A special lithographic ink is used, which is similar to printers' ink, but with addition of a dryer. It is applied to the stamp by a composition roller in similar manner to printers' ink and gives a black impression which blue prints well. The number stamp has movable type.

As a rule it pays to employ only high-class labor in the drawing office. A draftsman puts his own impress on his work, his individuality goes into it, even if closely supervised, and it is upon the perfection of detail that the success or failure of a new design mainly depends; it is important that the draftsman intrusted with it shall have the necessary skill and ability.

In conclusion, the writer would say: Do not have so much system that it is difficult to work to or burdensome to carry out. A few simple rules, faithfully adhered to, are better than the most elaborate system which is loosely or imperfectly carried out. The object of a system is to define the duties of each man and to fix the responsibility of dereliction of duty.

A New Bedford, Mass., rope company have received an order from a Chicago firm for a rope which, it is said, will be the largest ever made. It is to be used on the driving wheel in the engine room of the Chicago Cable Road Company. It will be 3 inches in diameter and 11 inches in circumference. There will be 12 of these ropes on the wheel; each of them will be 1260 feet long and the combined length of the 12 ropes will be 3 miles. The cost will be \$5000.

Predictions are freely made at Duluth that by the beginning of August there will not be enough wheat at the head of the lakes to supply the mills. The amount in store at present is only 7,000,000 bushels, while the amount in farmers' hands is insignificant, and millers are already drawing largely upon the elevators. Consequently, the supply is more than likely to be exhausted before the new crop begins to move.

In describing the present industrial situation in New England, the Boston *Transcript* says that a number of the mills are now being run not for the profit there is in the business nor simply to keep the men at work, but be-

cause the managers find there is a slight difference in expense account between running them at a loss and letting them remain idle. The manager of the Manchester Print Works, for example, believes in running the mills so long as the loss is less than 25 per cent. In other words, the expense of maintenance of idle mills is 25 per cent. of the actual cost of running, and as long as the loss in manufacturing goods falls below this 25 per cent. the mills will be run.

### Trial of the U. S. Cruiser "Minneapolis"

On her preliminary trial trip last week, the new Philadelphia built triple screw cruiser "Minneapolis" attained the remarkable speed of 22.26 knots per hour, under the disadvantage of burning anthracite coal instead of the Pocahontas coal, always used on trial trips hitherto. Her sister vessel, the "Columbia," only made 20.98 knots on her first trial, so that the "Minneapolis" showed fully 1½ knots greater speed. The trip was made off the New Jersey coast under far from favorable conditions as regards weather. Nevertheless the trial proved throughout the most satisfactory and successful run of any ships the Cramps have built. Passed Assistant Engineer Willets, who represented the Engineering Bureau on the "Minneapolis" trial trip, reports that the performance of the machinery was remarkably good. On the 7th a maximum speed of 22.26 knots was maintained in deep water for an hour with an average of 128.7 revolutions per minute of all three engines, steam pressure 160 pounds at the boilers, forced draft of less than 1 inch air pressure, throttle half open. The displacement of the ship was less than 7000 tons, and the speed was recorded by patent log, corrected from runs over a known course the day previous. The engines ran very quietly and steadily at all speeds with no unusual vibration. The indicator cards taken on the last part of the deep sea run were worked out, showing 20,080 horse-power. The "Minneapolis" will make her official run about July 9.

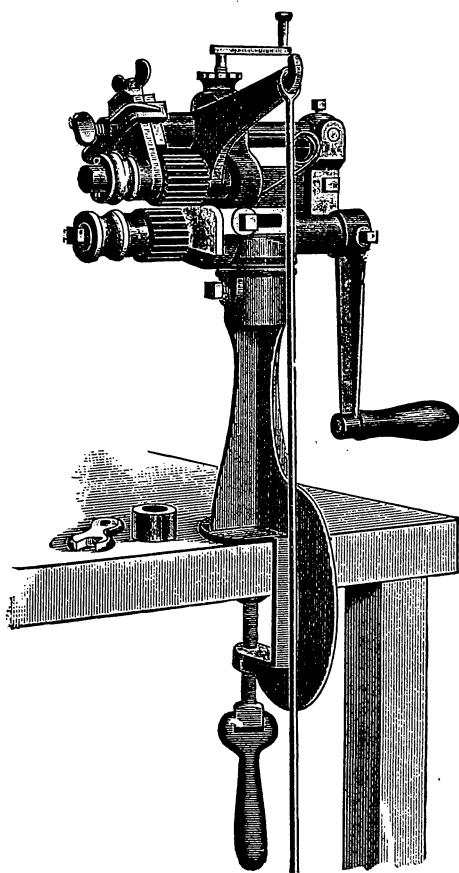
The condition of depression into which the business of the United States fell in the latter half of last year is clearly illustrated in the report of the Chamber of Commerce of this city, just issued. The Clearing House exchanges for 1893 are therein stated to have been no less than \$5,649,367,056 under those of the previous year, and the lowest in amount since 1888. The value of the imports of foreign merchandise in 1893, exclusive of coin and bullion, was nearly \$100,000,000 less than the total for 1892, while exports in the same period showed a comparative decrease of \$63,000,000.

The popularity of municipal bonds with investors at the present is evidenced by the *Financial Chronicle's* published table of such issues marketed during May. The total amount of sales reported in that month was \$14,350,000, a considerable increase on any monthly sales this year, and exceeded only once since the establishment of the record. The high prices paid, too, were remarkable. Several cities have placed their bonds on more favorable terms than they have ever been able to secure before.



### The New Lightning Pipe Crimper.

The pipe crimper herewith represented is a machine brought out by the inventor, W. A. Wheeler of the Indianapolis Elbow Company, Indianapolis, Ind. It is designed for general use in tin shops, as well as for factories where large quantities of stove pipe are made, rapidity of action and uniformity of work produced being the objects sought to be attained. A leading feature of the new crimper is the manner in which the rolls are brought to bear upon the work. This is accomplished, preferably, by means of a treadle connected with a lever, which, with the arrangement of the parts, gives to the upper rolls a swinging motion and brings them to bear upon the work with a toggle joint movement, thus holding it very rigidly with little or no pressure on the treadle, as the forward movement of the crank in



*The New Lightning Pipe Crimper.*

drawing the work through serves to hold the rolls down, relieving the operator of any special effort as to this part of the work. As a matter of fact, if the foot be removed from the treadle after starting the work in it goes through all the same. A slight backward movement of the crank instantly releases the work. The toggle movement also acts as a safeguard against any slighting of work by a careless hand, as the depth of crimp does not depend upon the treadle pressure, being regulated entirely by the crank screw at the top, which is secured from working loose by means of a lock nut. If desired, this machine may be closed and opened by means of the screw, the change being effected in an instant and without in any manner impairing its efficiency. To effect this the lever is brought down as far as possible and then a pin is pushed in which

prevents the rolls from swinging, but allows them to rise and fall vertically with the movement of the screw. This feature will be appreciated where odd jobs are to be done, but for turning out work in quantities the treadle will be found preferable. The upper swedging roll is attached to a separate head block, which is secured to the swinging frame by means of a clamp made fast by a thumb screw, as shown in the cut. Another thumb screw above this head block furnishes means for adjusting the swedge to different depths without affecting the crimp. The head block is readily removed by loosening the clamp and slipping it off when it is desired to leave the swedge off the work; or the same result may be accomplished quicker by pulling out the spring pin that holds the roll on and then slipping it off. The rolls are made of hardened cast steel and are machine finished all over. They can be interchanged when worn out at one end.

### Washington News.

*(From our Special Correspondent.)*

WASHINGTON, D. C., June 12, 1894

#### The "Minneapolis."

Engineer in Chief Melville and his associates in the Bureau of Steam Engineering are highly gratified with the performances of the "Minneapolis," the sister ship to the "Columbia." Her highest record, 21.75 knots an hour, on her preliminary trial when the conditions were new and untried, the Chief thinks, will mean an increase on that exhibition of speed on her official trial the first week in July. The breaking of the "Columbia's" preliminary record was a surprise, although it was fully expected that the "Minneapolis" would maintain the record.

In the case of the "Minneapolis" the question of fuel was against her. This fact leads to the opinion on the part of the Chief that the naval world is on the eve of a great surprise in the line of speed of great warships. Chief Melville feels particularly pleased from the fact that he met with considerable opposition when the question of triple screws was under consideration. The experience of other nations had not been very satisfactory in their application to large ships. The Chief's improvements, however, in their application corrected some of the objections found in their use by other experts.

If the "Minneapolis" justifies the expectations based upon her official efforts the United States will not only have solved the problem of this latest application of motive power to warships but will have two of the fleetest armored cruisers in the world.

The success of the "Minneapolis" will also do much to overcome the doubts in the minds of some legislators in regard to the perfection of modern ships, and may lead to the building of one or two more on the same designs.

#### The Tariff.

Senator Gorman in conversation with the correspondent of *The Iron Age*, remarked: "I believe we can see our way to the passage of a tariff bill. I am of the opinion that it will not differ materially from the form in which it passes the Senate. I do not believe that the measure will be completed quite as soon as some of our friends

prophecy. It may be finished in the Senate during the present month, but with the delays in conference and reconciling the House to its amended provisions it may be the middle of July before it is finished."

Senator Aldrich gives as his views on the subject: "Although we are not in favor of the tariff measure as it is going through the Senate, the opposition which the Wilson and the Senate Committee bills have encountered has forced such modifications in the direction of rates which are a moderate safeguard against overwhelming importation of foreign wares on non-revenue bearing and free trade lines and quasi protection, that it may be deemed expedient in the interest of the country not to offer further resistance than full discussion, so that the manufacturers and wage workers may understand our position, and then simply record our votes in opposition to the measure as passed. The industrial interests will then have full opportunity to test the legislation, as it will stand not so bad as the majority would have had it if unopposed, but still far enough in this direction to give that extent of modification a fair trial. Of course every one knows that the passage of a bill by this Congress means the continuance of that policy until after March 4, 1897. A change will only then be possible in the event of an entire reversal of control in both branches of Congress and the executive. The whole matter will then be in the hands of the people and the future policy of legislation and administration will be for them to determine.

"I admit there are some among us who advocate continuing the opposition to any measure except one framed on a protective basis, but this sentiment is not unanimous. The industries wish to adjust themselves to what for the present might be conceded to be inevitable conditions. If that is the best course then the quicker it is accomplished consistently with the line we have laid down of doing the best we can, the quicker that end is achieved the better."

Senator Quay said: "As far as I am familiar with the wishes of the manufacturers, they prefer to have the question settled now, and the best way would seem to me to be to submit the question to the people in the next Congressional elections. If the people vote to sustain the policy embodied in the Wilson bill by the election of a majority of the next House committed to its provisions, I am willing to submit. I believe that too much importance has been placed upon the tariff feature of the election of 1892. Of course that was a factor, but there were other equally if not more important influences at work. One of these was the lack of harmony among the active men on the ticket. I am not in favor of too much haste in passing the bill, even as amended. The delay thus far has resulted in an improvement as compared with the bill as it came from the House. It is possible that a vote in the Senate will be reached early in July. The final passage of the bill will depend upon the difference between the majorities of the two Houses. The minority will be recorded in opposition to the bill."

There will be quite a discussion over the woolen schedule, but the only contest of any stubbornness will be on certain items on the free list. The free raw material hobby will have to be well ridden out before that perplexing question can be disposed of in the parliamentary arena.

### Tests of Rapid Fire Guns.

The tests of 6-pounder rapid fire guns which have been in progress at the Sandy Hook Proving Ground for some time are of interest and great importance, as the result will probably determine the selection of the best gun of this type for the army. The trials have been made by a board consisting of Major F. H. Phipps, Capt. Frank Heath and Capt. William Crozier. The programme followed has served to try the guns in the severest manner, and was determined upon in order to bring out the durability and accuracy of fire of the several guns entered in the competition; to ascertain the relative merits in regard to rapidity of fire, ease of manipulation, and time of dismantling and reassembling the breech mechanism—this last requirement being desirable as giving the time of delay if, in service, it should become necessary to replace any piece of the breech mechanism. In short, the tests are intended to develop any error in design or weakness in construction, and to show the relative advantages of the different patterns.

The guns entered are the Driggs-Schroeder, Hotchkiss, Spoussel, Maxim-Nordenfeldt and Seabury. A 3-pounder Skoda—used in the Austrian army and navy—has been fired, but not in competition with the others. In all of the guns the breech block is operated by a crank, placed in different positions according to the design, and one movement of which opens the breech to admit the cartridge, while the reverse movement closes the breech. But here all resemblance of the different types ceases, unless we except the vertical movements of the breech blocks in all but the Driggs-Schroeder. It is apparent that, especially in testing for rapidity of fire, the weight of the breech block and the direction of its movement are items of the greatest importance. The weights of the breech blocks are as follows: Driggs-Schroeder, 31 pounds; Spoussel, 59 pounds; Hotchkiss, 88.5 pounds; and Maxim-Nordenfeldt, 73.5 pounds. In the weight of material to be handled the advantage is decidedly in favor of the first mentioned. The only vertical movement of this block is that necessary to disengage it from its support. This support is effected by bands or square threads, formed on the top and sides of the block, which enter grooves in the interior of the breech. The further movement of the block is a rotary one about a spindle. This, in combination with the light comparative weight of the block, makes it the easiest and least tiresome to handle, as compared with other designs in which a weight of from 50 to 70 pounds must be lifted several inches at each loading.

All the guns have stood the severe usage to which they have been subjected admirably. The superiority of any one will depend upon design rather than upon material or workmanship. The tests have been conducted with the utmost impartiality and thoroughness, and the report of the board will be of the greatest value.

The rolling mill operatives at the northern end of the Tuscarawas Valley, Ohio, have not displayed that careful exercise of judgment during the coal miners' strike that has characterized their actions in the past when disturbances of this kind occurred. While trouble may be fast approaching for themselves they enter freely into those of others. At Canal Dover, Ohio, the

rolling mill men of that place and New Philadelphia were ringleaders in an attempt to prevent the militia from going to Cambridge, and on Saturday last formed a parade and marched to Pike Run, south of New Philadelphia, to take part in a mass meeting of miners. The members of the Amalgamated lodges walked 6 miles and back under a scorching sun, but the miners concluded to stay at home and did not avail themselves of the kindly offices of the iron workers, whose action caused much surprise and adverse comment.

### Trade Publications.

AN ILLUSTRATED PRICE LIST of Fairbanks' scales, steam specialties and general machinery has been issued by the Fairbanks Company of New York, Albany, Baltimore, Boston, Buffalo, New Orleans, Philadelphia, Pittsburgh and London, England. The volume is  $9\frac{1}{2} \times 12$  inches and contains 524 pages. The first 70 pages, following a very complete index, are devoted to illustrated descriptions of the many different types of scales made by this company. These include platform scales specially applicable to almost every industry requiring the weighing of material, spring balances, jewelers' balances and scales for gold and silver coin and bullion, which require exceedingly nice adjustments, weighing beams counter and market scales, &c. The compound suspension scales are intended for weighing heavy articles while being handled by cranes. They are provided with a ring at the top to receive the crane hook and with a hook at the bottom to receive the load. Some idea of the compactness of these scales may be formed from the fact that the one having a capacity of 20,000 pounds measures 37 inches and weighs but 350 pounds.

The following 125 pages describe steam specialties, bearing metals, aluminum alloys, &c. In the renewable vulcanized asbestos disk globe valves the disk is composed of the fiber of asbestos, to which is added by a patented process the water proof vulcanizing material, making a very durable packing which will not crack or flake off. It is held central in its seat by guides cast on the body of the valve. It is also secured to the spindle without the use of nuts, screws, pins, wires or anything that is liable to become detached while in use. The vulcanized asbestos ring is forced into the brass disk holder and the metal is spun over the edges of the ring so it cannot drop out. These disks can be put into the valve without trouble. A wide range of valves and cocks are constructed with this material. The balance of this division of the catalogue describes valves and cocks of almost every conceivable type, and closes with a description of the Hancock inspirators, Vulcabeston packings, and anti-friction metals and aluminum alloys.

The last part of the volume deals with steam engines and boilers, steam and power pumps, metal working machinery, emery wheels and grinders, iron pipe and fittings, pipe fitting machinery, portable blacksmiths' forges, wood split pulleys, machinists' tools, trucks and barrows. A few pages at the back are devoted to information of value to the shop owner and mechanics in general.

During the month of May the steel rail mills booked orders aggregating 50,500 tons, of which the Illinois and Edgar Thomson together took about 40,000 tons, leaving only about 10,000 tons for all the other mills. The deliveries during the same time amounted to 77,000 tons.

The New York delegation to the Detroit convention of Master Plumbers, at a meeting, passed a resolution, the substance of which is "That this delegation present the name of, and place in nomination for the office of president of the National Association, John Mitchell, now vice-president."

### THE WEEK.

Baltimore comes next in importance to New York as a grain shipping port, handling 50,000,000 to 60,000,000 bushels annually, and about 3,500,000 barrels of flour.

Petroleum in paying quantities is being found in Wilson, Neosho and Allen counties, Kansas, and about 40,000 acres of land have been leased by oil operators from Pennsylvania.

The receivers of the Union Pacific Railroad have concluded to relieve the company of the burden of carrying numerous small branch lines which have no prospect of paying operating expenses. An application has been made to the court asking permission to drop a number of branch roads aggregating about 1100 miles.

The Massachusetts Legislature has passed a bill authorizing the increase of the stock of the Bell Telephone Company to \$50,000,000, with an amendment that the capital stock shall be paid for in cash.

Illuminating oil sold by the Standard Oil Company has touched this week the lowest price ever reached, the result of a fight against outside dealers.

The revenue of Canada for the month of May shows a falling off of over \$500,000, as compared with the corresponding month last year. The decrease for the ten months of the fiscal year is over \$13,000,000.

The offer of a prize of \$50,000 for the invention of the best underground electric propulsion system, to be determined by the State Railroad Commissioners, has been withdrawn by the Metropolitan Traction Company of New York City.

A striking illustration of the value of goods depending on their proximity to market is shown by the railroads in Mexico using mahogany for ties, this valuable wood being there so abundant and difficult of carriage to markets where it is called for.

The waters of the disastrous flood in the Frazer River Valley, B. C., are subsiding, leaving behind them ruined crops, devastated farms, drowned cattle, and even loss of human life. The amount of damage done by the flood is estimated at several million dollars.

A joint conference between the leaders of the Knights of Labor, American Federation of Labor and other labor organizations began in St. Louis on Monday. Its object is to arrive, if possible, at an agreement for harmonious and concerted action in the questions now under agitation.

Three Chinese naval officers attached to the Chinese Legation at Washington are visiting the shipbuilding establishments of the United States, with a view of studying methods of construction for the benefit of their country. They have been making a close inspection of the Philadelphia yards this week.

The Cramps have been ordered to proceed with the work of repairing the damage done to the hull of the cruiser "Columbia" at her recent trial. The work will be done at the League Island Navy Yard, Philadelphia, and will occupy about a month.

The American built steamer "El Rio" made the trip from New York to New Orleans last week in 4 days, 17 hours and 28 minutes, breaking all previous records by over two hours.



# The Iron Age

New York, Thursday, June 14, 1894.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.  
CHAS. KIRCHHOFF, - - EDITOR.  
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.  
RICHARD R. WILLIAMS, - - HARDWARE EDITOR.  
JOHN S. KING, - - BUSINESS MANAGER.

## The Anarchistic Strikers.

Insurrections of more or less magnitude have broken out in 12 States. If they were due to political causes the whole country would be in a ferment. As they are merely demonstrations by striking workmen, excitement runs high in the immediate localities affected and diminishes rapidly as the distance increases. Yet in nearly all these States it has been found necessary to call out the militia to check the commission of unlawful acts by bodies of men too large to be successfully handled by local authorities. The reports printed in the daily press read like bulletins from battle fields. Bloody engagements take place, lives are sacrificed, property is destroyed and the "horrid front" of war has become a vivid reality in too many places. Strikers defy the law and resort to the most desperate deeds of violence in a mad fury. They seem to have broken loose from all restraints and cannot be controlled by their leaders. These labor officials in their public utterances counsel peaceful methods, but they have evoked a demon who refuses to be confined and mocks their feeble efforts at restraint. In the wide organization of labor unions a new species of government has been formed, which is in direct antagonism to the form of government established by the people, and the conflict now precipitated must decide who shall hereafter be our rulers.

When the coal miners' strike began the sympathy of the public was overwhelmingly in their favor. The advantages of cheap fuel were scorned when it was found that such cheapness was the result of scanty wages paid to miners. Even coal operators themselves conceded the justice of miners' claims and professed their willingness to advance wages in quite a number of localities if competing operators would do the same. Enough of them at one time were ready to settle the dispute to have given the miners a great victory, which could then probably have been extended over the entire coal country. But the obstinacy of the leaders in refusing partial settlements and demanding a national adjustment changed the whole aspect of affairs. To hasten a coal famine desperate means were adopted by the miners. And now public sympathy has changed. The friends of the miners are deserting them. The press, without regard to politics, demands that the law shall be respected, that the movement of coal trains shall not be interfered with, that

coal property shall not be destroyed, that miners who desire to work shall not be molested and that those who are in arms against the constituted authorities shall be treated as rebels. There is no longer any question of high or low wages for miners. The only question to be settled now is whether any body of men are to be permitted to establish a government of force in this land of liberty.

## Wasting Accumulated Capital.

A large Western hardware merchant recently made an interesting statement of his personal experience, which is explanatory of some existing conditions. He said that prior to last year his business had steadily grown from season to season. His books showed satisfactory profits on his sales, and he knew as well as he knew anything that he was constantly increasing his capital. Yet he was unable to accumulate actual cash to his credit corresponding with his expanding resources. His profits were reabsorbed in his business and he felt poor in consequence, because there was no increase in his reserve of cash. But his stock had steadily grown larger, his bills receivable had swollen, he discounted his own bills and felt as safe from financial disturbances as a man could under the circumstances. The situation, however, radically changed after the panic of last year. Sales fell off and with the reduction in sales he allowed his stock to run down. Believing that a very conservative policy was the course of wisdom, he made special efforts to clean up stocks of antiquated patterns and slow selling articles rather than to make new purchases in the regular way. He was fortunate in having solvent customers, so that his losses were very slight. As accounts were settled his bank deposits grew, because they were not being heavily drawn upon to pay for fresh stocks. The consequence is that he can now realize by the possession of actual cash what his profits have been for several years. His capital is mainly in bank instead of being distributed among his customers.

Inquiry among other merchants and manufacturers discloses a similar condition of affairs. The manager of one large manufacturing concern, with Eastern and Western connections, stated that the increase in their idle capital was a source of anxiety with them. Their operations are so large that the shrinkage in their volume of business had released such immense sums of money that it is difficult to find safe places for further deposits. They have loaded up their regular banks to the limit of prudence. Other banks are having the same experience with their customers and refuse new deposits of large sums because they have no use for the money and will not assume the responsibility of taking care of more. These manufacturers would willingly invest their capital as of yore in purchasing fresh stocks of

material and working it up in advance of the requirements of their customers. But they have no incentive to do so when they find that a greatly reduced force of operatives is able to turn out work faster than it can be marketed.

Not for years have solvent business houses had such large cash reserves as at present. They are fortified against financial disturbances if any should come, which of course will not be the case with such an abundance of money everywhere. Their position is one of ease and comfort, as compared with that of a year since, when great enterprises were daily being forced to the wall for lack of a very little ready cash. It seems almost absurd now to think of houses with a million or more of capital quaking over the payment of petty bills, and making assignments because they were unable to raise two or three hundred dollars in a whole morning. And yet the present situation is extremely unsatisfactory and not without its features of gravity and anxiety. Manufacturers and merchants are transacting such a small volume of business that it is unprofitable. Their expenses in too many cases are in excess of their incomes from current trade. Capital is therefore being drawn upon to meet the deficiency. This cannot continue indefinitely. Economy is being enforced and expenses are cut down in every conceivable way to avoid the further impairment of capital, but there is a limit to economy and retrenchment. They can be carried so far as to seriously cripple an establishment and cause it to lose its standing in the trade. The question then comes up in the management, Shall we drop out of the race and wind up affairs, or go on and continue to eat up our capital? If the uncertainty which now clouds all commercial affairs by reason of the inaction of Congress is not speedily removed, many will decide to "let go" rather than continue to consume their capital and ultimately be forced into bankruptcy.

## Western Interests Secure an Advantage.

The long fight waged by Chicago interests for lower freight rates to Southern points has been won at last. It is asserted by Chicago manufacturers and merchants that for 20 years they have been unable to secure as favorable railroad rates as Eastern manufacturing districts to Southern trade centers, except on a very small part of the shipments made. The distance is about the same from, say, New York as from Chicago to the Southeastern cities, but shorter from Chicago to Southwestern cities. The contention of Chicago business men for a long time was to secure equal rates, and it is not easy to understand why they were not granted. On north-bound business the rates have been lower from the South to Chicago than to Eastern points. The maintenance of rates discriminating against Chicago on

southbound business was therefore an anomaly. Appeals for fairer rates have been made to the officials of railroad associations without success. Now, however, the Interstate Commerce Commission has been induced to use its authority, and on the 2d inst. a decision was rendered fixing maximum rates as follows:

Maximum rates from Chicago to Southern points, as ordered by Interstate Commerce Commission, June 2, 1894. Showing also rates from New York and former rates from Chicago. Defendants ordered not to charge higher rates than new rates specified and to make all necessary readjustments of their tariffs.

Knoxville, Tenn.						
Distance.	from	1.	2.	3.	4.	5.
560—Chicago, old	116	99	82	64	55	42
560—Chicago, new	93	79	62	44	37	32
735—New York	108	95	83	71	59	48
Chattanooga, from						
595—Chicago, old	116	99	82	64	55	42
595—Chicago, new	100	88	65	47	39	34
847—New York	114	98	86	73	60	48
Rome, Ga., from						
673—Chicago, old	147	126	106	85	71	58
673—Chicago, new	114	97	79	61	49	38
925—New York	114	98	86	73	60	49
Atlanta, Ga., from						
738—Chicago, old	147	126	106	85	71	58
738—Chicago, new	126	107	85	62	50	39
876—New York	114	98	89	73	60	49
Meridian, Miss., from						
723—Chicago, old	134	109	91	76	63	55
723—Chicago, new	114	98	82	60	47	38
1,142—New York	114	98	86	73	60	49
Birmingham, Ala., from						
652—Chicago, old	119	103	83	64	55	42
652—Chicago, new	111	95	72	52	44	34
990—New York	114	98	86	73	60	49
Anniston, Ala., from						
715—Chicago, old	147	126	106	85	71	58
715—Chicago, new	126	107	85	62	50	39
949—New York	114	98	86	73	60	49
Selma, Ala., from						
746—Chicago, old	138	126	103	87	67	53
746—Chicago, new	128	112	89	65	53	38
1,080—New York	114	98	86	73	60	49

An examination of this table will show how radically the rates from Chicago have been cut from old schedules. While they have hitherto been, with few exceptions, much higher than rates from New York the situation is now reversed, and the exceptions are those in which New York rates fall below those from Chicago. These are maximum rates, it is true, and lines running south from New York can cut under them if they choose, but as lines running south from Chicago would then have to make equivalent reductions or another appeal would be made to the Interstate Commerce Commission, the principle seems to have been established as a permanency. This is disagreeable news for the East in just the same ratio as it proves agreeable reading for the West. It makes Western manufacturers and merchants stronger competitors for Southern trade. But it is in line with readjustments of trade which have long been in progress and will simply have to be endured. The star of the West is in the ascendant.

During the coal miners' strike Ohio manufacturers, who usually pay about \$1 25 per ton for run of mine coal, to operate their shops and rolling mills, have paid as high as \$3.50 for steam coal and \$4 25 for lump. Some have used cordwood at \$2 50 per cord, and hundreds of tons of anthracite coal have been burned under boilers. On some classes of manufactured iron and steel this means additional cost at the rate of \$6 to \$7 per ton of finished product, and the rolling mill men who burned this expensive fuel and know the loss it

means also helped to intimidate train hands on military trains going to scenes of riot.

### The Riots at McKeesport.

Concerning the rioting at the plant of the National Tube Works Company, McKeesport, Pa., early last week, we have the following official advices:

On Monday committees of the Board of Trade and the strikers waited upon Assistant Manager Crosby, and the whole ground was very thoroughly threshed over. The result of the meeting was that every point was taken up and discussed, the strikers' committee expressing themselves as thoroughly satisfied that the time for a demand for higher wages was inopportune, and the best thing for the men to do was to return to work. The citizens' committee expressed themselves as satisfied with the company's position, and were not slow in advising the other committee to take a very firm stand. Members of the committee were bound to secrecy and were very careful not to have the result of the conference divulged. In the mean time a general meeting of the strikers was called for that evening, which the Board of Trade committee was invited to attend. Had the matter rested here, the vote which was taken at the meeting would have been overwhelmingly in favor of returning to work at the old rate, which is the only rate that the men will ever return to work at. Just at this time occurred an incident which is directly responsible for the continuation of the strike, and largely responsible for following events. A local paper came out with an extra to the effect that the committee was to report to the general meeting that the company had offered the men an advance of 10 per cent. This extra was printed by the thousands and spread broadcast. The result was that the men all flocked to the meeting with the expectation of hearing the grateful news that they were to be given more money. However, the report of the committee advising the men to go to work fell like a thunderclap and caused such excitement that the so-called secret vote that followed was in favor of the continuation of the strike. As many of the men desired to come to work—in fact, as we believed a great majority of them so desired—we opened the mill on Tuesday morning with 330 men. We had never really been shut down, because the machinists and some of the departments had been working right along; but Tuesday morning was the first time we attempted to run any furnaces. We had 330 men in the mill, and as soon as the men heard the crack of the tubes and found the furnace department was in operation they gathered in great numbers. By noon we found that it would be as much as the men's lives were worth to go home, so we arranged to feed them. A few went home and succeeded in returning to work, but the majority were fed within the property. By afternoon we had arranged to camp all who desired to stay over night in the car repair shop. We had cook stoves erected and had provisions on hand; in fact, everything was in shape for the men's comfort. The crowds got larger and larger and more menacing as the day drew to a close. When 6 o'clock came the mob was in shape for mischief and on the lookout for the men returning to their homes. When they found that the company had arranged to camp the men over night, or most of them, their feelings were wrought

into a state of frenzy and they rushed on to the company's property with a whoop and a howl and proceeded to clean out the place of all workmen. This they did in a mighty few minutes. Some of the men took to the river, others hid in different places, but all fled for their lives. We had previously notified the sheriff and taken the necessary legal precaution to make the county responsible for our property. At present it is under the charge of the sheriff. We have no immediate idea of operating our works, since we have a mill running in the West, which is making enough pipe to take care of our shortages and our merchant lines. Besides that, our trade has fallen off greatly and we conclude that we are just about as well off in an idle condition at the present time. The company cannot afford to pay any more wages, and will not do so at this time. Contrary to a higher rate of wages, there is every indication of necessity to lower wages if the present business depression continues for any great length of time.

### PERSONAL.

John Pedder, who has been general manager of the Wayne Iron & Steel Works of Brown & Co., Incorporated, Pittsburgh, for more than 15 years, severed his connection with that firm last week. Mr. Pedder, accompanied by his wife, will sail for Europe on Saturday, the 16th inst.

John S. Evans, for some years superintendent of the plant of the Keystone Rolling Mill Company of Pittsburgh, has severed his connection with that firm and will engage in the glass business at Marion, Ind.

S. T. Wellman and George W. Goetz will sail for Europe toward the end of this month.

S. Groves, late assistant to John Walker of Walker Mfg. Company, Cleveland, Ohio, and editor of that company's elaborate three-volume catalogue, is now managing the foundry department of the Union Foundry & Machine Company, Pittsburgh, Pa. The plant of the latter company is being thoroughly remodeled to Mr. Groves' designs, especially the gear molding department.

George Reeves, president of the New Philadelphia (Ohio) Iron & Steel Company, and Jeremiah Reeves, president of the Reeves Iron Company, Canal Dover, Ohio, were among the passengers who sailed for Liverpool last Saturday.

Jos. D. Weeks of Pittsburgh, Pa., will soon sail for Europe.

C. J. H. Woodbury has resigned the vice-presidency of the Boston Manufacturers' Mutual Fire Insurance Company, his resignation to take effect September 1. His active connection with the company will terminate July 1, a leave of absence having been granted for the remaining two months. On September 1 he will enter the service of the American Bell Telephone Company.

Charles J. Harrah, president of the Midvale Steel Company of Philadelphia, is mentioned in connection with the Democratic nomination for Governor of Pennsylvania.

R. W. Carroll, resident manager of the American Tube & Iron Company, Pittsburgh, has been compelled to resign by the demands of other business interests.

### Bethlehem Armor.

The Bethlehem Iron Company have redeemed their reputation for good work through the test of armor plate which took place at Indian Head on Tuesday. Some time since the Bethlehem Iron Company offered for acceptance a lot of 17-inch armor plate. The plate chosen for trial was known to be defective and was demolished by the shots. We take from the New York *Tribune* the following account of the successful trial.

The plate was attacked by a 12-inch high powered, rifle firing shell, weighing 850 pounds. The trial was conducted by Captain Sampson, Chief of the Naval Bureau of Ordnance, and was witnessed by a board of naval officers composed of Lieutenant-Commander Condin, Professor Alger and Lieutenant Ackerman. There were also present President Lindermann, Lieutenant Meiggs and R. W. Davenport of the Bethlehem Company.

The results of the trial are highly satisfactory both to the Government and to the manufacturers. They justify fully the claims of naval ordnance experts that the Harvey process can be successfully applied to the thickest plates, and that plates so treated are superior at resisting penetration to any other kind of armor made at home or abroad. The plate tested to-day was 17 inches thick. It represents about 650 tons of curved armor intended for the barbettes of the battle ship "Massachusetts." The plate was supported by 36 inches of oak backing. Behind the structure was the usual quantity of earth. Facing the target was the same 12 inch rifle whose projectiles demolished the 18-inch Harvey plate in May. The gun was trained to strike the plate as nearly normal as possible, the deviation being less than 2° from the vertical.

Lieutenant Mason of the navy directed the firing. The first round was to determine the plate's resistance to cracking. The shot had a velocity of 1410 feet per second and a striking energy of 13,800 foot tons. It hit the target to the left and a little below the center. When the dense cloud of smoke cleared away it was found that the plate was practically uninjured. The shot had penetrated to a distance of only 6 inches. No cracks had been developed nor was there any bulging in the rear. Around the shot hole could be observed the usual rough edged fringe brought out by impact on Harvey plates, but no discoloration was visible. The projectile, a Carpenter, was shattered into fragments, some of which flew to a distance of 200 yards. So far the plate had passed a highly satisfactory test.

The second shot was fired to determine the plate's resistance to penetration, as required by contract stipulations. In this round the charge of powder was increased to 400 pounds, giving a velocity of 1858 feet per second. The striking energy went up to 21,300 foot tons. The shot hit the plate to the right and a little above the center, nearly normal to the vertical line, in a spot wholly unaffected by the first impact. It was found that the penetration was about 10 inches. The point of the shell was welded in the plate; the other parts were completely wrecked and thrown to the front. The only injury to the plate was a fine line or crack extending from the shot hole to the edge. The crack did not open nor did it extend in more than one direction. In all respects the plate was ready for further terrific pounding. It had kept out

the projectile and was therefore acceptable.

Naval ordnance experts are enthusiastic over the results of the test. They regard the trial as conclusive proof that Harveyizing heavy armor does not injuriously affect the plates. They also think that there is now no question of the practicability of treating the surface of even the thickest plates to the hardening process.

### Duluth News.

An important matter for the iron trade—if true, and it is believed here—is the reported purchase of an interest in the Oliver, one of the largest Mesaba mines, by the Carnegie Steel Company. Explorations made during the spring have shown the mine to be the largest on the Mesaba range, and it has been so opened that it is one of the two practically successful open pit mines on the range, for after all has been said there are at the present only two satisfactory open pit mines operating on this range. By the explorations referred to it was found that the ore body is 400 feet in depth, where the drilling was done, at least, and that the ore lies over an area of 600 x 2500 feet.

Ore shipments are very large from the lake ports, exceeding 1,250,000 tons for the season to date, besides about 200,000 tons from Escanaba. Coal shortage tied up many boats at the close of last week.

The new all steel passenger greyhound of the lakes, the "North West," arrived in Duluth Friday, on her first trip. On Lake Superior she logged 21½ miles with engines turning 106 revolutions under pressure of 190 pounds. The plan is to turn 130 revolutions with 225 pounds steam when the machinery gets into condition. The vessel should make 24 to 25 miles an hour. Her coal consumption is 125 tons daily. Under forced draft the stoke hole is comfortably cool, even cold. Her boilers are Belleville tubulous, 28 in number, tested to 500 pounds. The ship is 386 feet long, 360 between perpendiculars, 44 feet beam and will draw 20 feet as soon as the channels will allow. She was given the honor of opening the Hay Lake channel into Lake Superior, on which the Government has spent \$2,700,000. She will be regularly employed in the Buffalo-Duluth run, making the 2000-mile round trip, with six stops between terminals, every six days.

The ship's engines are twin quadruple expansion of 3500 horse-power each, operating twin screws of 14 feet diameter. Everything on and about the ship was built in Cleveland. Pencoyd steel is used in the hull. So clean are the ship's lines that the water closes behind her so smoothly as to make no following wave. Her lines forward are like those of a yacht and she stands up like a man of war. A sister ship, the "North Land," will be put on the run next June. For his daring in putting \$1,500,000 in these two vessels President Hill of the Great Northern Railway deserves the success he is sure to have with them.

The depression in the shipping trade with the far East is clearly reflected in the report of the directors of the Suez Canal, which has just been published. According to the statistics presented the net tonnage using the canal during the past year shows a decrease of 52,900 tons, as compared with 1892, while the

amount of dues declined from \$16 684,220 in 1891, and \$14 290,487 in 1892, to \$14,133,472 in 1893. The number of vessels which passed through the canal was 4207 in 1891, 2559 in 1892, and 2341 in 1893. Of these 3217 in 1891, 2581 in 1892, and 2405 in 1893 carried the British flag. The percentage of British vessels last year was 72 per cent., as against 72½ per cent. in 1892.

### Compressed Air Devices for Shops.

At the May meeting of the New England Railroad Club F. M. Twombly, master mechanic of the Old Colony at Roxbury, Mass., spoke as follows:

I commenced the use of compressed air some two and a half years ago. The first thing I did was to make a hoist out of brass tubing, using for a piston rod cold rolled steel shafting. I constructed the hoist for experimenting. At that time we were taking up our rails on the Providence Division, and they were to be shipped to Cape Cod for a second track. We had to drill two holes in each end of the rail, and two men were employed with a suspended drill for this purpose, one man receiving \$1.50 a day and the other one \$1.75 a day, and at night they were pretty tired with their work. The rails were raised with a chain and fall, which had a 1-ton lift, and cost \$35. The hoist which I constructed and put upon this work cost \$28. I kept an account of the whole matter and found that the hoist paid for itself in 15 days. I put up hoists all over the shop for lifting all kinds of machinery and 42-inch passenger wheels. I rigged a radial run hoist for various uses, and I propose to put up one in place of the derrick we have been using. I have used the air for elevating purposes, for lifting a cab through the floor, laying the hoist horizontally. The power can be multiplied or divided, as on any block and fall. The one we use for lifting through the floor has a cylinder 15 feet long. In the first hoist I spoke of the diameter of the tube was 6 inches and its capacity 1500 pounds. I put a cylinder under the floor of the room to lift up wheels. I force oil out of the barrels into the tank by means of this power, using a sliding pipe, letting a little compressed air on top of the oil in the barrel, and it is forced into the tank. A barrel of water can be emptied very quickly in that way. I am constructing a machine to take sand into a tank the same as water. In the tank shop, where we build tanks for the whole system, we construct a great many, and they are built upside down. We have formerly turned them over with a block and fall, but now we have got some hoists to handle those tanks by means of air. I use this power on a copying press; also to force oil on to a bolt when cutting it. I take an auxiliary reservoir and fill it with oil, letting a little compressed air on to the oil, and it can be applied to the work as you like, and when you want to run it into the tank again you remove the pressure and let it run back by gravitation.

There are thousands of things it can be used for, and there is no difficulty in running it up and down the yard; it is only the cost of the pipe and the slight labor of putting it down. I have an overhead railroad in the yard, with hoists to load and unload cars and for taking ashes out of tubs into cars, and I use this power in many other ways.

## Low Ebb in Pig Iron Production.

How greatly the coal and coke strikes have told on current production of pig iron is thoroughly shown in the figures which we present below. In the territory west of the Alleghenies and north of the Ohio there were only 19 furnaces blowing on June 1, with a weekly capacity of 29,996 tons, as compared with 65 furnaces, with a weekly make of 83,870 tons, on April 1. This shows a drop in production of 53,874 tons, and does not take into account the stoppage of plants in Central Pennsylvania or the reduction of output in the South as the result of the coal troubles there.

On June 1 the active furnace plant, grouped according to fuel used, possessed the following weekly capacity:

Fuel.		
Anthracite.....	30	12,139
Coke.....	40	47,104
Charcoal.....	18	3,274
Totals June 1.....	88	62,517
Totals May 1.....	127	110,210

Increase or decrease..... - 39 - 47,693

The weekly product of all the furnaces on April 1 compared as follows with that of preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
June 1, 1894.....	88	62,517
May 1.....	127	110,210
April 1.....	144	126,732
March 1.....	133	110,166
February 1.....	125	99,242
January 1.....	130	99,087
December 1, 1893.....	130	99,379
November 1.....	117	80,070
October 1.....	114	73,895
September 1.....	125	83,434
August 1.....	169	107,042
July 1.....	220	153,762
June 1.....	244	174,029
May 1.....	251	181,551
April 1.....	255	178,858
March 1.....	255	176,978
February 1.....	251	171,201
January 1.....	246	173,068
December 1, 1892.....	246	176,271
November 1.....	244	171,082

The position of the anthracite furnaces was as follows:

Anthracite Furnaces, June 1, 1894.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	18	1	567	17	6,043
New Jersey.....	11	2	1,100	9	3,691
Spiegel.....	3	3	244	0	0
Pennsylvania:					
Lehigh Valley.....	44	11	4,034	33	12,998
Spiegel.....	1	0	0	1	60
Schuylkill Valley.....	27	5	2,529	22	10,390
U. S. Susquehanna Valley.....	14	3	1,447	11	3,494
L. S. Susquehanna Valley.....	16	1	700	15	3,294
Spiegel.....	1	0	0	1	525
Lebanon Valley.....	15	4	1,513	11	5,108
Totals.....	150	30	12,139	120	45,803

For a number of months past our records of active anthracite furnaces show the following:

	Furnaces in blast.	Capacity per week.
June 1, 1894.....	30	12,139
May 1.....	35	17,607
April 1.....	34	17,739
March 1.....	32	16,618
February 1.....	27	13,827
January 1.....	29	13,081
December 1, 1893.....	32	16,188
November 1.....	34	16,166
October 1.....	34	15,998
September 1.....	43	20,758
August 1.....	51	23,572
July 1.....	63	29,268
June 1.....	70	33,916
May 1.....	67	33,168
April 1.....	72	34,641
March 1.....	74	34,773
February 1.....	74	32,871
January 1.....	70	32,772

During May work was stopped at the Warwick Furnace in the Schuylkill Val-

ley, at one Crane in the Lehigh Valley, Marshall in the Upper Susquehanna and the two Colebrook furnaces and Robeson in the Lebanon Valley. The four last named stopped on account of scarcity of coke. It should be noted also that the work of other furnaces was impaired from the same cause. The furnace of the Allentown Rolling Mill started during the month and one Crane has resumed since the 1st inst.

The position of the coke furnaces was as follows:

Coke Furnaces, June 1, 1894.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	7	0	0	7	6,304
Pennsylvania:					
Pittsburgh District.....	25	6	10,445	19	80,558
Spiegel.....	1	1	960	0	0
Shenango Val. and Juniata and Conemaugh Valley.....	16	1	1,060	15	14,978
Spiegel.....	16	0	0	16	12,844
Youghiogheny Valley.....	1	0	0	1	950
Miscellaneous.....	3	1	847	2	1,465
Maryland.....	4	0	0	4	2,500
West Virginia.....	5	0	0	5	6,000
Wheeling District.....	1	0	0	1	250
Ohio:	8	0	0	8	8,307
Mahoning Val. Central and Northern.....	14	0	0	14	12,024
Hocking Val. Hanging Rock.....	11	2	2,221	9	7,058
Indiana.....	14	1	695	13	3,041
Illinois.....	14	1	0	13	3,452
Minnesota.....	2	0	0	2	412
Wisconsin.....	19	6	13,228	13	16,612
Missouri.....	1	0	0	1	629
Colorado.....	5	2	1,500	3	2,288
The South:	6	0	0	6	3,572
Virginia.....	3	1	1,150	2	1,200
Kentucky.....	22	6	3,539	16	9,500
Alabama.....	7	0	0	7	2,844
Tennessee.....	38	7	7,139	31	17,380
Georgia.....	14	5	3,640	9	4,081
N. Carolina.....	2	1	670	1	600
Totals.....	260	40	47,104	220	168,796

As compared with previous months the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
June 1, 1894.....	40	47,104
May 1.....	75	88,580
April 1.....	92	105,011
March 1.....	83	89,794
February 1.....	80	81,970
January 1.....	80	81,997
December 1, 1893.....	72	78,241
November 1.....	57	58,820
October 1.....	52	53,061
September 1.....	54	56,976
August 1.....	84	77,907
July 1.....	122	117,672
June 1.....	140	132,079
May 1.....	146	139,788
April 1.....	145	135,488
March 1.....	145	133,579
February 1.....	140	129,396
January 1.....	138	131,731

In the whole territory west of the Allegheny Mountains, north of the Ohio and east of the Mississippi, only 19 furnaces, with a capacity of 29,996 tons, were at work on June 1.

On the 1st of this month one furnace of the Edgar Thomson plant was on Bessemer and one on Spiegel. Carrie No. 2 blew in on June 1. Clinton was able to secure coke right along. Laughlins & Co. have fired up an additional stack, making two in operation.

In the Shenango Valley only Stewart is at work. Dunbar is running, and in Ohio Glasgow, Emma and Franklin are producing. In the Chicago district the Illinois Steel Company have seven furnaces producing, and Mayville in Wisconsin is running. Iroquois is banked.

In Virginia Princess was stopped by the strike, but Pulaski was started in May. In Alabama the furnaces have

been holding on very well, considering the long continued troubles. The Sloss plants were idle on the 1st, but four Tennessee, one Woodward and two Pioneer kept running. It is reported that at least one of the latter is about to go out. In Tennessee production continues quite large, the only furnace stopped by the strike being the South Pittsburg of the Tennessee Company.

The status of the charcoal furnaces was as follows:

Charcoal Furnaces, June 1, 1894.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England.....	13	2	155	11	895
New York.....	5	2	199	3	263
Pennsylvania.....	13	1	63	12	841
Maryland.....	6	1	124	5	301
Virginia.....	13	0	0	13	827
Ohio.....	8	1	59	7	594
Kentucky.....	3	0	0	3	290
Tennessee.....	9	1	100	8	991
Georgia.....	3	1	248	2	220
Alabama.....	13	3	818	10	2,485
Michigan.....	20	4	1,152	16	5,071
Missouri.....	2	0	0	2	597
Wisconsin.....	4	1	236	3	1,760
Texas.....	4	1	120	3	470
Washington.....	1	0	0	1	100
Oregon.....	1	0	0	1	200
Totals.....	118	18	3,274	100	16,015

As compared with previous months the record of active charcoal furnaces stands as follows:

	Furnaces in blast.	Capacity per week.
June 1, 1894.....	18	3,274
May 1.....	17	4,023
April 1.....	18	3,982
March 1.....	18	3,754
February 1.....	18	3,645
January 1.....	21	4,099
December 1, 1893.....	26	4,950
November 1.....	26	5,084
October 1.....	28	5,496
September 1.....	28	5,700
August 1.....	34	5,563
July 1.....	35	7,224
June 1.....	34	8,034
May 1.....	38	8,595
April 1.....	38	8,729
March 1.....	36	8,623
February 1.....	37	8,934
January 1.....	38	8,865

A few small furnaces have started, whose work, however, is overbalanced by the stoppage of two larger stacks. In New England, Landon and one Canaan have resumed. Stickney, in Maryland, has just started. In Ohio, Olive and Vesuvius were to blow in early in this month. No. 1 Antrim, in Michigan, a large furnace, blew out on May 26, and Newberry has also stopped. Bibb, in Alabama, ceased running in May. Old Alcalde, in Texas, was at work during only eight days in that month.

### Stocks.

The position of stocks, sold and unsold, as reported to us May 1, was as follows, the same furnaces being represented as in former months:

	Apr. 1. Tons.	May 1. Tons.	June 1. Tons.
Anthracite pig.....	146,039	145,584	133,512
Coke pig.....	531,264	518,190	285,451
Charcoal pig.....	201,538	216,807	213,026
Totals.....	878,841	880,581	631,989

It must be remembered, as we have frequently stated in connection with these reports of stocks, that they do not include the quantities held by the large steel companies East and West. It is a notorious fact that all of these have heavily reduced their holdings, and that some have cleared their yards entirely and have been forced to shut down.



## MANUFACTURING.

### Iron and Steel.

An additional stack at the Edgar Thomson Steel Works, Bessemer, Pa., was blown in last week, making three out of nine furnaces in operation.

The Akron Iron Company, Akron, Ohio, J. A. Long, receiver, have signed the scale of the National Union of Iron and Steel Workers for the year commencing July 1.

It is stated that there is a possibility of labor troubles at the Duquesne Steel Works, Duquesne, Pa. It seems that several days ago about 35 riggers and a number of machinists signed a petition asking that the wages paid them previous to the reduction in January last be restored. At that time riggers were getting \$1.46 per ton and machinists \$2.75. These amounts were reduced to \$1.26 for riggers and \$2.25 for machinists. The petition was prepared and handed to the superintendent of the plant and resulted in all the single men who signed it being discharged. Of these 26 were riggers and six were machinists. It is stated that these men are now trying to cause trouble and bring out all the employees of the plant on strike.

The Indiana Steel Casting Company, organized under the laws of Illinois with a capital stock of \$200,000, are building a steel plant at Frankton, Ind. A 10-ton open hearth steel furnace will be used. It will occupy, with its auxiliary equipment, a building 60 x 200 feet, and is expected to be ready for operation by August 1. The company will make a specialty of car couplers after the design of William Chambers, a steel castings manufacturer of long experience. General castings will also be made as called for by the trade. It is the expectation of the company to maintain a business and sales office in The Rookery, Chicago. The incorporators of the company are William Chambers, Lafayette M. Chambers and James T. Hall.

Capitalists of Cambridge, Ohio, have announced their intention of building a rolling mill for the manufacture of black plates for tinning purposes. The proposed plant is to be built at the junction of the Baltimore & Ohio and the Cleveland & Marietta railroads, and will consist of about six mills, together with a train of cold rolls and complete equipment. The buildings projected are one 200 x 100 feet for rolling mill purposes, one 200 x 60 feet for annealing, pickling and shipping, and a boiler house 40 x 60 feet. All buildings will be constructed of steel and iron and the machinery has been designed to conform to modern ideas of economical production of the best quality of plates obtainable. The leading spirits of the enterprise are John Marquand, C. L. Campbell and John C. Beckett, all of Cambridge. It is expected that the organization will be completed in a few days.

The Andrews Brothers Company, Haselton, Ohio, manufacturers of bar, band and hoop iron and steel, have had sufficient coal right along, and at present are operating their plant double turn in all departments.

W. C. Runyon, well known in the iron ore trade of Cleveland, Ohio, has leased Hall Furnace, at Sharon, Pa., and will put it in operation as soon as a regular supply of coke can be secured. This stack was formerly operated by P. L. Kimberly & Co., Limited, but was blown out in April. S. Allen Richards will have charge of the furnace. The furnace will use 25 per cent. Mesaba ore.

Corrigan, McKinney & Co. of Cleveland, Ohio, have leased from the Cleveland Iron Company River Furnace, at Cleveland, and it is now being prepared for blast, and is expected to be in operation on Bessemer iron not later than August 1 next. This furnace was formerly operated by Pickands, Mather & Co., but has been idle for nearly two years.

The Solar Iron Works of William Clark's Son & Co., at Pittsburgh, were closed down in all departments last week on account of the coal strike.

The Arethusa Iron Works of George W. Johnson, at New Castle, Pa., manufacturers of plate and sheet iron, have been using natural gas for fuel and operations have not been affected in the least by the coal strike. The plant is being operated double turn in all departments and the firm are considerably behind on orders.

The plant of the Paige Tube Company, Warren, Ohio, which has been operated ir-

regularly on account of lack of fuel, resumed operations last week, having acquired a large supply of West Virginia coal. Three hundred and fifty men were given employment.

The New Castle Wire Nail Company, New Castle, Pa., have commenced to make some extensive improvements in their rod mill at that place, which is now idle. Four more large tubular boilers will be added and an 1800 horse-power compound engine will also be installed. Important changes in rolls and heating furnaces will be made, and when ready to resume operations the rod mill of this concern will be one of the finest in the country.

In the case of the Falcon Iron & Nail Company of Niles, Ohio, against the city of Niles to restrain the issue of bonds and the completion of the contract whereby R. G. Sykes and others were to receive a bonus for building a rolling mill in that city, a decree was taken in Warren last week by consent of both parties. The decree perpetually enjoins the proposed proceedings in this case, in which there were special irregularities, but leaves the validity of the law under which the bonds were to have been issued unimpeached. It will be remembered that when the city of Niles had prepared to issue the bonds a temporary injunction was served restraining taking such action.

The Bessemer department of the plant of the American Steel Casting Company, formerly known as the Solid Steel Works, at Alliance, Ohio, has been closed down for an indefinite period.

At Pittsburgh last week the equity suit of James Tod and Frank G. Slocum against C. Y. Wheeler and the Sterling Steel Company came up for trial. The suit is to compel the defendants to pay royalties amounting to between \$20,000 and \$30,000 on a certain secret process of manufacturing a high grade of steel, which are alleged to be overdue. The defendants claim that they have no knowledge of the plaintiffs inventing such a method, and deny that a contract was entered into to pay the plaintiffs a percentage of all the sales of the new steel. At the hearing the presiding judge refused to continue the case on the ground that it was not clearly shown that the two processes were the same, and he bound the case over until the September term of court.

The Treat Car Wheel Works, at East Chicago, Ind., which have been idle for several years, have been leased by parties who propose to fit up the plant for the manufacture of steel castings.

Some important improvements are being made in the American Iron & Steel Works of Jones & Laughlins, Limited, at Pittsburgh. A number of hydraulic tables have been installed, which will displace a number of cranes and do away with the services of quite a number of employees.

Reinhard Mannesmann of Germany, manufacturer of the well-known seamless tubing bearing his name, was a visitor in Youngstown, Ohio, last week, and while there held a conference with a number of prominent iron manufacturers of that place, with a view of erecting a plant in Youngstown, Ohio, for the manufacture of seamless tubing. It is the intention of the citizens of Youngstown to secure the plant if possible, and steps will be taken at once, so that a definite proposition can be made to Mr. Mannesmann within a short time.

On the 1st inst. the directors of the Bessemer Land & Improvement Company of Bessemer, Ala., voted to organize a company with a capital stock of \$500,000 and bonded for \$500,000 more for the purpose of erecting and operating a steel plant at that point. H. F. De Bardeleben is president. The Land Company have ample assets, no debts, and will take all the stock.

It is stated that a lodge of the National Union of Iron and Steel Workers has been organized among the employees of the rod mill of Baackes & Co., Cleveland, Ohio. The new lodge will be known as the Forest City Lodge of Ohio and is said to be the fifth lodge of the above organization in Cleveland.

The steam forge department of the Reading Iron Company has been thoroughly overhauled, and is now prepared, with increased facilities, to furnish forgings of all shapes, sizes and weight at short notice. Its capacity for making iron blooms up to 1000 pounds in weight is practically unlimited, and as they are made under one of their largest hammers their solidity is insured. Recently a double hammered iron steamboat shaft 7½ inches diameter and 45 feet long, finished complete, was shipped

from there to the West; also 28 finished shafts, with couplings, to the plant of the New Jersey & Pennsylvania Concentrating Works.

The new foundry of the Norwalk, Ohio, Foundry & Machine Company has been finished.

The Lebanon, Pa., Iron Company started up on the 5th, after an idleness caused by scarcity of fuel.

Two new furnaces are being erected in the plant of the Lukens Steel & Iron Company, at Coatesville, Pa. The new furnaces are of 40 tons capacity.

The Bethlehem Iron Company have shipped two armor tubes and one thrust shaft for engine 147 to Cramps' yards. The tubes weigh 14 tons and the shaft 9 tons.

At a meeting of the directors of the Bessemer Land & Improvement Company, Bessemer, Ala., a few days ago, H. F. DeBardeleben was elected president. At the same meeting the directors decided to erect in the city of Bessemer a basic open hearth steel plant with a daily capacity of 300 tons. At the meeting of the directors H. F. DeBardeleben, David Roberts and A. T. Smythe were appointed a committee to look into the matter and take whatever steps were deemed necessary to carry into effect such plans as they thought best. The Bessemer Land & Improvement Company have \$500,000 available, which will be put into the steel company, and in addition to this a similar amount will be raised by mortgaging the lands of the land company and placing bonds of the steel company.

Estimates and plans are now being prepared for a tin plate mill to be added to the new agate ware plant of the Lalance & Grosjean works in Harrisburg, Pa.

The trial of the suit of the Clapp-Griffiths Company of Pittsburgh against the Pottsville Iron & Steel Company, to recover money due on patents, was brought to an end on June 9, after nearly two weeks' trial. The claim of the plaintiffs for \$17,500 due was not allowed. The Pottsville Iron & Steel Company paid on account \$5000 when the contract was made, but refused to pay the balance, claiming fraud as to the representations concerning the performance of the converter. The plaintiffs claimed that their process admitted of low cost of plant because no blooming mill would be needed and that forge irons or iron high in phosphorus could be employed, from which steel superior to the ordinary Bessemer metal could be made, capable of being used as a substitute for Swedish iron. It was also claimed that the waste would not exceed that in the ordinary converter. The defendants held that a blooming mill was indispensable, and that they were compelled to build such a mill; that iron no higher in phosphorus could be used in the Clapp Griffiths converter than in the ordinary vessel, and that the waste ranged from 15 to 20 per cent.

The Britton Rolling Mill Company, Cleveland, Ohio, manufacturers of iron and steel sheets, and who have had under erection for some time a plant for the manufacture of tin andterne plate, advise us that one tin mill will be started on Monday, the 18th inst., providing a supply of coal can be obtained. This firm expect to have two more mills in operation by August 1 next.

### Machinery.

The machine shops of the Pennsylvania Railroad at Altoona, Pa., are working about half force, three days per week, of eight hours each.

The Altoona Mfg. Company, Altoona, Pa., are working a full complement of men in their engine department, and are running their plant 12 hours per day and six days per week.

The Harrisburg Foundry and Machine Company, Harrisburg, Pa., are operating their plant eight hours per day and five days per week. This concern having no soft coal on hand they are firing their boilers with hard coal and are giving employment to 200 men.

The Ross Iron Works of Brooklyn were recently incorporated with the Secretary of State, at Albany, N. Y., to conduct a general machinery business. The directors named are J. McCaldin, J. W. Sullivan, C. Cunningham, Jr., and others of Brooklyn.

The Bass Foundry & Machine Works of Fort Wayne, Ind., have contracted to build for the New Castle (Pa.) Steel & Tin Plate Company a 1500 horse power engine. It is to be a tandem compound Bass improved Corliss pattern and when completed

will be the largest engine ever constructed in Indiana. A year ago the Bass works built two 500 horse-power engines for the same company.

The Vulcan Iron Works will erect a one-story and basement shop in connection with their works at 46 Irving place, Chicago. It will cover 90 x 125 feet.

The Milwaukee Malleable Iron Company of Waukesha, Wis., have completed their new works and are now ready for business. The foundry is 70 x 225 feet, and another building used for a machine shop, annealing department, shipping room and office is 50 x 225 feet. They start with contracts which will employ about 50 molders.

William Tod & Co., Youngstown, Ohio, have received an order from Pickands, Mather & Co. of Cleveland, Ohio, for one of their 42 x 84 x 60 inch blowing engines to be erected at Alice Furnace, Sharpsville, Pa. This stack will be put in operation at an early date.

The New Era Iron Works have been incorporated at Dayton, Ohio, with a capital of \$50,000, to manufacture gas engines and iron specialties. Their engine—the New Era—has been in successful operation for nearly two years. It will be built principally in the larger sizes, and especial attention will be given to its construction for private electric light plants. V. P. Van Horne is president of the company, L. M. Johnston vice-president, and A. M. Sullivan secretary and treasurer.

The latest Blanchard lathe is mentioned by the Egan Company of Cincinnati, Ohio, as showing the improvement that has been made in wood working machinery during the past few years. Not long ago 900 buggy spokes was considered a good day's work. The latest machine requires but one movement of the operator to each spoke, instead of five, as formerly, and the output is 2800 spokes per day of ten hours.

A large addition is being made to the Turner Machine Works of Danbury, Conn.

Arrangements have been perfected for the early construction of the Bartow Foundry & Machine Shops, at Bartow, Fla.

Tomlin & Harris have purchased the old plant of the Cordele Machine Company, Atlanta, Ga., and will proceed to erect a new machine shop on the same ground.

The Orvis Steel Arch Mfg. Company of Milwaukee, Wis., have filed articles of incorporation, with a capital stock of \$25,000. The company are organized for the purpose of manufacturing Orvis steel arch furnaces. The incorporators are Fred. Krause, Robert Nunnemacher and Henry Smith.

The Yale & Towne Mfg. Company of Stamford, Conn., are reported to be looking for a site, at Pittsburgh, or at Cleveland, for their crane department.

The plant of the W. F. Washburn Brass & Iron Works, Yonkers, N. Y., was sold under the direction of the receiver, Joseph M. Stoughton, at public auction, June 6, by E. De Forest Shelton & Co., 280 Broadway, New York City. The machinery was sold in many lots, to buyers from Pennsylvania to New Hampshire, thus removing the possibility of the plant being again started at Yonkers.

#### Hardware.

The J. I. Case Threshing Machine Company, Racine, Wis., have commenced the erection of a new brick warehouse at Fargo, North Dakota. It will be 80 by 100 feet, two stories and basement.

The Polisho Company have been organized at Detroit, Mich. The company will put on the market a new metal polish. William Auberlin, Martin S. Smith and Charles T. Karpp comprise the company.

The stockholders of the Morse Twist Drill & Machine Company, New Bedford, Mass., at a recent meeting elected the following directors: F. S. Allen, T. M. Stetson, A. G. Pierce, G. Allen and E. S. Taber.

The firm known as C. M. Clark & Co. of Shortsville, N. Y., manufacturers of the Star seeder, have been dissolved, and the name has been changed to the Star Seeder Company.

The Cable Lock & Novelty Company of Pittsburgh have been formed with a capital of \$1000. The directors of the company are Adin Sailor, Sidney F. Murphy and Ewing B. Kimberly.

The Dent Hardware Company will erect

a big brick factory at Fullerton, near Allentown, Pa., for the manufacture of all kinds of hardware specialties.

The H. M. Myers Company, Beaver Falls, Pa., manufacturers of shovels, spades and scoops, are operating their plant to nearly full capacity, the present output consisting of about 5000 dozen of shovels per month.

The contract for all the steel and iron work for the new Pulaski County Jail at Dublin, Va., was recently awarded to E. T. Barnum of Detroit, Mich. This contract includes genuine chrome steel cells, partitions, window guards, iron stairs, steel beams, &c. The jail, when completed, will be one of the most modern and complete in the State of Virginia.

Hubbard & Co. of Pittsburgh, manufacturers of shovels, after a shut down of a few days on account of having no coal, have again started their plant, using oil as fuel, the burners being supplied by Meyers & Co. of Buffalo, N. Y.

#### Miscellaneous.

The agreement under which the employees of the Massillon Stone & Fire Brick Company, Massillon, Ohio, were working, and which was a reduction of 15 per cent. from old wages, expired on June 1. When the coal strike has been settled and this firm are ready to resume operations they expect to again ask for a 15 per cent. reduction, as they claim they cannot see anything in the present condition of business which would justify them in paying higher wages than have been paid during the past six months.

The Schultz Iron & Bridge Company of Pittsburgh have received a contract for the construction of a steel bridge over the tracks of the B. & O. Railroad at Elizabeth street, in Pittsburgh. The contract amounts to \$23,571.

The manufacturing plant of R. R. Howell & Co., Minneapolis, Minn., was almost entirely destroyed by fire on the 2d inst., involving a loss of about \$130,000, partially covered by insurance. The firm manufactured farm machinery and well supplies and had a very complete plant of expensive iron and wood working machines. They will rebuild at once.

The large agricultural implement warehouse of Buford & George and that of the Keystone Implement Company, Kansas City, Mo., were destroyed by fire on June 11. The loss is estimated at \$300,000.

The Burden Seamless Filled Wire Company will erect a factory 525 x 40 feet, six stories high, at Providence, R. I.

The annual report of the most successful year in the history of the William Cramp & Sons' Ship & Engine Building Company was unanimously approved by the stockholders at the annual meeting held recently. Charles H. Cramp was re-elected president of the company; Benjamin Brewster, vice-president; Henry W. Cramp, secretary and treasurer, and, in addition to those just named, the following were chosen the Board of Directors of the company for the ensuing year: Clement A. Griscom, Samuel H. Cramp, Wm. M. Cramp, Jacob C. Cramp, Thomas Dolan and Henry Seligman of New York.

The Pittsburgh Locomotive & Car Works of Pittsburgh, with works in Allegheny, Pa., are rebuilding their carpenter shop and erecting shop, and the new structures will be made as nearly fireproof as possible. They will be equipped with improved machinery of the latest and best design.

Among recently authorized corporations in Illinois are the following: Semi Steel Company, Chicago; capital stock, \$5000; incorporators, Rockwell King, Martin Andrews and William Francis. Chicago Hard Copper Company, Chicago; capital stock, \$2,000,000; incorporators, John Moffit, Charles G. Tillman and Phil. V. Field. Rotary Engine & Machinery Company, Chicago; capital stock, \$100,000; incorporators, William Smith, Walter A. Bennett and Alonzo D. Smith. Ajax Feed Water Heater & Purifier Company, Chicago; capital stock, \$3000; incorporators, William H. Smith, George Sugme and Leslie A. Gilmore. Economic Electric Engine Company, Chicago; capital stock, \$100,000; to manufacture and sell electric motors, engines, &c.; incorporators, Charles A. Jackson, Uriah Copp and Robert Doyle.

The eighth annual report of the Wheeling Natural Gas Company, Wheeling, W. Va., recently issued, shows that \$940,000 of

the authorized capital of \$10,000,000 has been issued. Total assets March 31, 1894, were \$1,052,298.03. After charging to profit and loss the sum of \$210,293.80, being all expense accounts and depreciation in gas wells, &c., the net debt is \$102,000. Earnings for the year from sale of gas and oil amounted to \$337,016; running and operating expenses were \$117,867 and the earnings \$8873. During the year three new wells of gas were drilled and two good wells purchased. There were 34 oil wells completed, 11 are now drilling and 26 ordered to be drilled. During the year \$230,769 was spent for leases, &c. The bills payable amount to \$102,279; accounts payable, \$7254. There were 341,844 barrels of oil sold at an average price of 70.6 cents per barrel, or \$241,369. The gross production during the year was 395,454 barrels of oil. The oil and gas plant now embraces 245.30 miles of pipe, 25 producing gas wells, gas pumping station and 60 producing oil wells, and leases on about 17,000 acres of land not yet operated.

The reorganization plan of Cofrode & Saylor, Incorporated, and the Reading Rolling Mill Company is now so far advanced that a petition for the discharge of the receiver is in course of preparation for presentation to the court.

M. O. Roberts, proprietor of the Roberts Machine Works, Collegeville, Pa., has just completed a large addition to his foundry.

#### OBITUARY.

JOSEPH K. BALE.

Joseph K. Bale, the president of the recently organized American Steel Casting Company, died on the 8th inst. at Thurlow, Pa., of apoplexy. He was born in Allegheny City, Pa., 47 years ago, and when the Otis Steel Company were organized at Cleveland, Ohio, he became secretary of that company and took charge of their selling department. He was very successful from the start and held his position until the company sold out their business. He afterward became president of the Solid Steel Company, Alliance, Ohio, and was at the head of that concern at the time they entered the American Steel Casting Company. He had just taken active charge of the general offices of the new company at Thurlow and was about to establish his home there. As one of the receivers of the Valley Railroad Company of Cleveland, Ohio, he was well known in the railway world.

The annual convention of the American Society of Civil Engineers promises to be an exceptionally successful one. We understand that the attendance attracted by the interesting programme will be exceptionally large. The convention begins on Wednesday, June 20, and the final session will be held on Monday, June 25. Arrangements have been made to visit the works of the Niagara Power Company who are now developing the water power of Niagara Falls, including the power house, turbines of 5000 horse-power each, wheel pits, tunnel, industrial village, sewage disposal works, &c.; also the mill of the Niagara Paper Company, which is the largest existing single paper mill, and is now using 3300 horse-power, and the mills supplied by the Niagara Hydraulic Canal.

Beginning on July 1 a competitive trial of machine guns will take place at the Washington Navy Yard. The prize is to be an order for 100 machine guns for the navy.

Prof. F. R. Hutton of New York, secretary of the American Society of Mechanical Engineers, has sailed for Europe.



## The Iron and Metal Trades.

The question which is foremost with the trade is whether the settlement of the Coal and Coke strikes when effected will lead to a relapse. The principal argument in favor of the maintenance of a range of prices higher than that of spring is that stocks have been pretty well cleaned up. In Iron as in other staples the country was never so bare.

A second point usually raised is that costs have advanced. That is true, but unfortunately the advance is not very large. It seems pretty certain that Coke for delivery during the second half of this year has been sold at \$1.25. Since the majority of furnacemen will find their low priced contracts at an end soon, it looks as though that figure might be established.

A good deal of Bessemer Ore has been sold during the past three or four weeks, and an advance of about 10¢ @ 15¢ per ton over the lowest prices has been secured. Liberally estimated this means an advance in cost of, say, \$0.75 @ \$1 per ton on the Bessemer Pig and \$1.25 @ \$1.50 per ton on Soft Steel.

A third argument is that during the troubles a good deal of work has been postponed, for which material must be bought. We are inclined to believe that this is overrated, since a prolonged stoppage generally kills a good deal of business outright.

Thus far there are few indications to show how matters will turn. For delivery during the next three or four months \$11 @ \$11.25 is being asked for Bessemer Pig in the Valleys. But buyers have not worked themselves up to that pitch yet, and the situation is not clear. The prices at which Bessemer is held have encouraged preparations to start some outside idle plants and have caused some furnaces which run on Foundry Iron usually to switch off on Bessemer. This looks as though there is a fair profit in the latter.

The Soft Steel trade is still at sea. The only transaction which may indicate the status for the future is the sale of 5000 tons of Billets at a price equivalent to \$17.25, Pittsburgh, for delivery during the second half of the year. This is about \$2 above the lowest point touched. In the Chicago market about 8000 tons of Billets have been sold, the quotation there being \$18.25.

Chicago appears to be the most active market in some of the leading lines. Our correspondent notes sales of about 20,000 tons of local Coke Foundry, and states that there has been a good deal of activity in Bars. A number of season contracts have been placed, but at low prices.

Throughout the East the demand in every line continues exceedingly slow. In fact, the indifference of buyers in the face of threatened scarcity has been phenomenal. It looks as though no movement in values can be expected until high temperatures in Washington have driven our legislators home.

The Lake Superior Copper companies have made a broad sweep and have sold 25,000,000 lbs at 9¢. The invasion of their trade by the Electrolytic Copper have finally driven them to drastic measures.

## Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,  
PHILADELPHIA, Pa., June 12, 1894.

The market has been of a very monotonous character of late, and, as a matter of fact, but little business has been done, except in small lots. The scarcity of Coal and the somewhat extraordinary rise in Steel completely stopped large transactions, so that for several weeks past consumers have been trading from hand to mouth, covering requirements that were absolutely necessary, but nothing beyond that. It does not appear that there has been any seriously inconvenient scarcity of material; it costs a little more and that is about all there was to it, but any one who would pay the \$2 to \$3 per ton advance got all they wanted. The wonder is that there was so little scarcity, considering the extraordinary shrinkage in production during the past 12 months, and especially during the past three or four weeks. Now that the strike appears to be in a fair way of settlement there will doubtless be fuller supplies, and it is supposed at lower prices, but that may prove to be a mistake. Stocks being exhausted, there must be a somewhat urgent demand for several weeks to come, and as Coal, Ore and freights will be higher there will not be much room for a decline, even at the advanced rates now ruling. At all events sellers are not discounting the future as they were two or three weeks ago. The one really disappointing feature is that the volume of business is so small. Some argue that with fuller supplies there will be a better demand, and, as a matter of fact, that is one of the reasons why sellers are less disposed to discount the future than they were two or three weeks ago. Moreover, it will take time to get things into working operation again, and, as the weather will probably be somewhat against a large output, it will not be safe to calculate on a full supply for several weeks to come.

**Pig Iron.**—There is a pretty fair demand for low grade Irons at about \$10.25 @ \$10.50 and of standard brands of Foundry No. 2 X at \$11.50 @ \$11.75, but it is very hard to get beyond these limits, notwithstanding the comparative light supply and the higher cost incident to higher freights. Consumers, however, show no desire to buy in excess of their own requirements, for which reason sellers are not crowding the market, leaving it to later developments to decide whether prices shall be advanced or not. Those who are in a position to form fairly correct opinions consider that while there may be no material advance, a decline to the low figures ruling some time ago is out of the question. A settlement of the Coal strike will naturally lead some people to look for a reaction in the price of Pig metal, but with stocks so near to the point of exhaustion and with higher cost of Ores, fuel and freights, it is difficult to see why there should be any reaction at all. Of course something will depend on the demand, and while the prospect of a large business is not very inspiring, there is no reason to suppose that it will be any less than it has been for several months past, hence there should be steady if not somewhat higher prices, especially on Steel stock. Meanwhile quotations for deliveries at Philadelphia or near by points are about as follows:

Bessemer, spot.....	\$13.00 @ \$13.50
Bessemer, July, August and September.....	12.50 @ 13.00
Standard No. 1 Foundry X.....	12.50 @ 12.75

Standard No. 2 Foundry X.....	11.50 @ 11.75
No. 2 Plain.....	10.75 @ 11.00
No. 1 Soft.....	11.50 @ 11.75
No. 2 Soft.....	10.75 @ 11.00
Standard Gray Forge.....	10.50 @ 10.75
Ordinary.....	10.25 @ 10.50

P. S.—The Crane Iron Company closed out all the Iron they have on hand, about 3000 tons. Sale closed this p.m.

**Steel Billets.**—There is no actual business to report, prices having been too high to attract attention. The best that can be done for deliveries in this vicinity for July and August is about \$20.50, and as consumers have Billets due them on old contracts at \$17.50 @ \$18, they are not willing to pay such an extreme advance until the old contracts are completed. Lower prices are expected now that the strike seems to be in a fair way of settlement, but it is not likely that Steel will reach anything near the low rates ruling two or three weeks ago, and in the meanwhile buyers hold off until the outlook becomes somewhat more settled.

**Finished Material.**—The demand for small lots has been very good, and as only a few mills are in a position to make deliveries, prices have been, and still are, very firm. The demand has been chiefly for Plates, Shapes, Skelp and Bars, for which 1.30¢ @ 1.40¢ has been realized for Plates and Angles, and a trifle less for Best Refined Bars. Iron has also been taken pretty freely on account of the difficulty in getting Steel, prices being about the same in both cases. The fact of the strike among the miners being in a fair way for settlement may lead to a demand for concessions on Finished Steel, but as a good many orders have been held in obedience until they could be presented under favorable circumstances, they will perhaps prevent very much of a decline, and if they are at all large or numerous they may also enable makers to maintain present quotations, which in any event are low, even in this era of unprecedentedly low prices. To-day's quotations (delivered) are about as follows:

Grooved Skelp.....	1.25¢ @ 1.35¢
Standard Refined Bars.....	1.30¢ @ 1.40¢
Medium quality.....	1.20¢ @ 1.25¢
Tank Steel.....	1.30¢ @ 1.40¢
Heavy Plates.....	1.30¢ @ 1.40¢
Shell.....	1.50¢ @ 1.60¢
Flange.....	1.60¢ @ 1.80¢
Angles.....	1.40¢ @ 1.50¢
Beams and Channels.....	1.50¢ @ 1.60¢

**Old Material.**—The demand is very slow and to secure business holders would have to make concessions. Asking prices, delivered, about as follows:

Heavy Melting Steel.....	\$9.50 @ \$10.00
Light Melting Steel.....	7.50 @ 8.00
No. 1 Wrought Scrap.....	9.00 @ 10.00
Machinery Cast.....	9.50 @ 10.00
Wrought Turnings.....	8.00 @ 8.50
Cast Borings.....	6.00 @ 6.50
Old Iron Rails.....	12.00 @ 12.50

## Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts.,  
CINCINNATI, June 13, 1894.

That there is a stronger undertone to the market is apparent, for while there has been little more than a jobbing demand during the week it was more general in this district and from the East and supplies are so much reduced that many of the Southern furnaces are not offering the grades most in demand at any price, and while they have generally sold Nos. 1 and 2 Foundry Coke Iron to the extent of the demand at previous prices, they demand an advance on No. 3 Foundry and it is difficult to

get them to name prices for Gray Forge. If the miners' strike is actually settled, as now seems probable, it will take some time for a supply of coke to become available for consumers as well as producers of iron and for the iron trade to work into a normal condition, and it is not improbable that the iron furnaces will insist upon better prices, for there is already inquiry for some large lots, and sellers are not disposed to name prices until the market is more settled. One thing seems certain and that is that prices will go no lower. Quotations are unchanged, but are scarcely more than nominal, as follows:

Foundry.		
Southern Coke, No. 1.....	\$10.25 @	\$10.50
Southern Coke, No. 2.....	9.25 @	9.50
Southern Coke, No. 3.....	9.00 @	9.25
Ohio Soft Stone Coal, No. 1.....	14.50 @	15.50
Ohio Soft Stone Coal, No. 2.....	14.00 @	14.50
Lake Superior Coke, No. 1.....	12.50 @	13.00
Lake Superior Coke, No. 2.....	11.50 @	12.00
Hanging Rock Charcoal, No. 1.....	17.00 @	17.50
Hanging Rock Charcoal, No. 2.....	16.50 @	17.00
Tennessee Charcoal, No. 1.....	13.00 @	13.50
Tennessee Charcoal, No. 2.....	12.00 @	12.50
Car Wheel and Malleable Irons.		
Standard Southern Car Wheel.....	16.25 @	17.00
Lake Superior Car Wheel and Malleable.....	16.25 @	16.75
Forge.		
Gray Forge.....	8.50 @	8.75
Mottled Coke.....	8.25 @	8.50

## Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, Pittsburgh, June 12, 1894.

The compromise effected at Columbus yesterday, by which the Pennsylvania Coal operators will pay 69¢ per ton and the Ohio operators 60¢ for mining coal, will likely end the great struggle. Although the date of resumption of operations has been fixed for Monday, June 18, a number of the country mines will go to work at once. The settlement of the coal strike is expected to hasten the end of the coke strike, although the situation in the Connellsville region yesterday was as serious as at any time during last week. Now that the first half of the year is closing, the subject of contracts for material for the last half of the year naturally comes up, but so far practically nothing has been done. It will take some little time to get old orders worked off that were on the books when the coal strike commenced and until this is done there will be no disposition to take on new business for forward delivery. It is also conceded that when idle plants get in operation again and stocks commence to accumulate, prices will recede to some extent. The tariff bill is also an uncertain feature, and with the increased cost of fuel the future of the market, as regards both demand and prices, is extremely difficult to forecast. It is not thought, however, that the unparalleled low prices of the first three or four months of 1894 will be touched again in a long time.

**Pig Iron.**—The market is absolutely featureless, there being no demand to speak of for spot iron, and nothing doing in the direction of making contracts for late delivery. The Pittsburgh and Valley furnaces are sold up to some extent, some of them for two or three months and are not inclined to make new contracts, while on the other hand buyers are not ready, for various reasons, to anticipate future wants. While \$11 at Valley furnace, equal to \$11.65, Pittsburgh, has been the basis of a few sales for July, August and September delivery, and is considered a fair price, there is so much uncertainty in the future that buyers are holding off and

furnaces are doing likewise. The fact that a number of Eastern furnaces are getting ready to go in on Bessemer as soon as coke can be secured, together with the fact that some Western furnaces that have done little or nothing for a year or more are also getting ready to go in, would indicate that the production of Bessemer pig in the near future will be extremely large. Mill and Foundry irons are very dull in demand, but prices continue firm. For close delivery the following prices are ruling:

Neutral Gray Forge.....	\$9.75 @	\$10.00, cash.
All-Ore Mill.....	9.75 @	10.00 "
No. 1 Foundry.....	\$11.50 @	\$11.75 "
No. 2 Foundry.....	10.75 @	11.00 "
Bessemer.....	13.00 @	13.25 "

We note a sale of 1000 tons of Gray Forge at \$9.75, Pittsburgh; 100 tons of No. 1 Foundry at \$11.50 and 100 tons of No. 2 at \$10.75, Pittsburgh.

**Ferromanganese.**—We continue to quote at \$53, delivered, for domestic.

**Billets.**—A Western consumer is credited with having closed a deal last week for 5000 tons Rod Billets, equal deliveries, August to December, at a price equal to \$17.60 at maker's mill, or about \$17.25, Pittsburgh. By some in the trade this is regarded as an extremely low price, and by others as very favorable, showing that there is a wide difference of opinion as to the probable price of steel for balance of the year. No further transactions involving late deliveries are reported. We are advised of a sale of 300 tons of Billets for prompt delivery at \$18.50, delivered at buyer's mill, and one of 100 tons at \$18.65 at buyer's mill.

**Structural Material.**—An order for some 2000 tons of miscellaneous shapes is in the market and will likely be placed before this month is out. We continue to quote as follows: Beams and Channels up to 15 inches, 1.30¢ @ 1.35¢; Angles and Universal Plates, 1.20¢ @ 1.25¢; Tees, 1.35¢ @ 1.40¢.

**Plates.**—While no large contracts are being placed, the demand for small lots is active and several concerns state that their order books are in fair condition. One large maker claims to have enough for three months' run. Prices are firm and we repeat quotations of last week, as follows: Tank, 1.25¢ @ 1.30¢; Flange, 1.45¢ @ 1.60¢, according to order; Shell, 1.40¢ @ 1.50¢; Marine, 1.60¢ @ 1.70¢; Fire Box, 2¢ @ 4¢, according to quality.

**Muck Bars.**—No transactions are reported since those noted last week. We quote at \$19.50 @ \$19.75 for best grades, delivered at buyer's mill.

**Merchant Steel.**—The market shows no new features and we repeat quotations as follows: Bessemer Machinery, 1.35¢ @ 1.40¢; Open Hearth Machinery, 1.55¢ @ 1.65¢; Open Hearth Spring, 1.70¢ @ 1.75¢; Cold Drawn Steel Shafting, 2.50¢, base; Tool Steel, 5¢ @ 7¢ for ordinary grades.

**Bars.**—The settlement of the coal strike will result in early resumption of operations among the mills, and stocks that have been so badly broken will soon be replenished. For some time past most of the mills have declined to quote on large lots and for extended shipment, but this feature of the market will probably be removed, as a supply of fuel in the near future is reasonably certain. Valley mills continue to quote at 1.10¢ in carload lots for iron bars, while some have quoted as high as 1.15¢. We quote steel bars at 1.20¢.

**Sheets.**—The difference of about \$2 per ton in favor of steel sheets has resulted in many buyers specifying iron in their orders. The few sheet mills that have been able to run right along have been pushed to their utmost to get out product as fast as wanted, and some of them are several months behind in their orders. We quote common iron sheets as follows: No. 24, 2.15¢; No. 26, 2.25¢, and No. 27, 2.35¢. For steel about \$2 per ton advance is asked.

**Wire Nails.**—The agreement entered into last month by the Wire Nail Association is reported as working satisfactorily to all concerned. The headquarters of the organization are in the German National Bank Building, Pittsburgh, Geo. T. Oliver being president and O. M. Hartzell secretary. The Executive Committee is to meet in Pittsburgh on the third Tuesday of each month, when claims, allotments and other business will receive attention. The established price of \$1.10 base, with equalized freights, is being firmly maintained, the demand being only fair.

**Wire Rods.**—A sale of 500 tons at \$25 at maker's mill is reported. There are very few inquiries in the market.

**Barb Wire.**—The season is practically over, and demand is correspondingly light. We quote Four-Point Galvanized at \$2.10, Pittsburgh, and Plain at \$1.45, in carload lots.

**Skelp Iron and Steel.**—There is nothing new, and we quote as follows: Steel Skelp, 1.15¢ @ 1.20¢; Sheared Steel Skelp, 1.25¢ @ 1.30¢; Grooved Iron Skelp, 1.30¢ @ 1.35¢; Sheared Iron Skelp, 1.40¢ @ 1.45¢.

**Pipes and Tubes.**—Makers claim they are getting 10% to 15% advance for such sizes as may be in stock. The plants of the National Tube Works Company and Duquesne Tube Works Company are idle on account of labor troubles.

**Connellsville Coke.**—The probable settlement of the coal strike is expected to lead to an early ending of the labor troubles in the Connellsville region. While the coke operators continue to make gains, progress is slow and the situation in the region yesterday was not very favorable, trouble being looked for this week. Nothing has been done as yet in the direction of making contracts for coke for the last half of this year. A little preliminary skirmishing showed that the views of the operators were in the direction of \$1.25 per ton at ovens. A few contracts running up to the close of the year are in existence, but not many. When the troubles in the region are over, the coke producers will be in a better position to figure on contracts for late delivery.

## St. Louis.

(By Telegraph.)

Office of *The Iron Age*,  
Bank of Commerce Building,  
St. Louis, June 13, 1894.

**Pig Iron.**—An increasing scarcity in No. 1 Foundry, with a tendency to advance the price of this grade, is the only feature of interest in the pig iron situation. Nos. 1 and 2 Soft Irons are also hard to obtain, but prices are unchanged. Sales during the past week will foot up probably 3000 tons, which is considered quite satisfactory for this

season. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry .....	\$11.00 @ \$11.25
Southern Coke, No. 2 Foundry .....	10.00 @ 10.25
Southern Coke, No. 3 Foundry .....	9.75 @ 10.00
Southern Car Wheel .....	17.00 @ 18.00
Lake Superior Car Wheel .....	16.25 @ 16.50
Ohio Softeners .....	14.25 @ 14.50

**Bar Iron.**—Mills continue to quote 1.15¢ for carload lots f.o.b. cars East St. Louis. The demand is not large and at the same time there is not much Iron being offered at this price. Jobbers ask 1.30¢ @ 1.35¢, according to quantity.

**Barb Wire.**—The demand for Barb Wire has dropped off almost entirely and the next 60 days will doubtless be an unusually dull period in this department. Mills ask \$1.90 for Painted and \$2.30 for Galvanized. Jobbers quote \$2 @ \$2.05 for Painted.

**Wire Nails.**—At \$1.20 Wire Nails seem to be firmly held. There is not much doing, but at the same time the low priced mills have apparently all the business they want. The outlook for any great improvement in this department is not flattering.

**Rails and Track Supplies.**—The movement in Old Iron Rails continues, and one or two lots have changed hands at a price close to \$10. Outside of these sales of Rails the market is extremely dull. We quote as follows: Steel Rails, \$26.50 @ \$27; Splice Bars, 1.35¢; Spikes, 1.75¢; Bolts, Square Nuts, 2.05¢; with Hexagon Nuts, 2.15¢; Steel Links and Pins, 1.65¢; Iron, 1.75¢.

**Pig Lead.**—Sales of a few hundred tons at 3.05¢ are noted. There is no scarcity of this metal, however, and consumers are likely to fill their demands for the balance of the month at the price above quoted.

**Spelter.**—The improvement noted in our last report continues in a moderate way. Sales are reported at 3.20¢, and offerings are limited at that figure. A slight advance in the early future is quite probable.

## Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, June 13, 1894.

**Pig Iron.**—The special feature of last week was the marked activity in local Coke Iron. Sales aggregated close to 20,000 tons, and a heavy inquiry continues. The improvement is not ascribed by dealers to any increase in consumption, but to the general anticipation by foundrymen of higher prices on account of the scarcity of fuel and the cleaning up of Pig Iron stocks. They are anticipating their wants much more freely than at any time for the past two years. The contrast is great as compared with the conditions which have prevailed so long a time. Furnace companies are not disposed to sell as freely as foundrymen would buy. They are limiting deliveries to the remainder of their care, and in many cases are endeavoring to cut down the quantities desired. Such action, as usual, only stipulates the buying movement. Prices are very firm and in some cases an advance is asked and obtained. Southern Coke steadily grows scarcer and prices are stronger. The companies making an advance say

they are selling as much Iron as at old rates. The movement in Southern Iron is, however, exceedingly light at present in comparison with the movement in Northern Iron. Quotations on Southern brands are now made only on carload lots for immediate delivery. The furnace companies are not disposed to sell for delivery far into the future, in view of the expected increase in cost of production and advances in freight rates. Sellers of Ohio Irons report growing scarcity and hardening prices. Sales of Lake Superior Charcoal have been made in small lots at full prices. Quotations are given as follows for cash:

Lake Superior Charcoal .....	\$15.00 @ \$15.50
Local Coke Foundry, No. 1 .....	11.25 @ 11.50
Local Coke Foundry, No. 2 .....	10.50 @ 11.00
Local Coke Foundry, No. 3 .....	10.00 @ 10.50
Local Scotch .....	11.50 @ 11.75
Ohio Strong Softeners No. 1 .....	13.00 @ 13.50
Southern Silvery, No. 1 .....	..... @ .....
Southern Silvery, No. 2 .....	..... @ .....
Southern Coke, No. 2 .....	10.00 @ 10.35
Southern Coke, No. 3 .....	9.75 @ 10.00
Southern, No. 1, Soft .....	10.25 @ 10.50
Southern, No. 2, Soft .....	10.00 @ 10.25
Tennessee Charcoal, No. 1 .....	..... @ .....
Tennessee Charcoal, No. 2 .....	..... @ .....
Alabama Car Wheel .....	17.50 @ 18.00
Jackson County Silvery .....	15.00 @ 16.00
Coke Bessemer .....	12.00 @ .....
Other Ohio Silvery .....	14.00 @ 14.50

**Bars.**—Transactions in Bar Iron have been numerous, and in some cases have run up to large quantities. Among them have been several season contracts. It had been expected that manufacturers would refuse to take season contracts at current rates, but not all of them have shown the same strength, and consequently the consumers now buying have been able to cover their requirements at very low prices. The market shows a little more strength in some directions, as sales have been made at rates which are considered good in comparison with reports in circulation of very low transactions. The market can be quoted for mill shipment at 1.02½¢ @ 1.05¢, Chicago delivery. Soft Steel Bars continue to show the firmness they have manifested for the past month, and while sales have not been so large as of Bar Iron, yet business for the week was fair and inquiries are in hand for considerable quantities. Manufacturers quote mill shipments at 1.30¢ @ 1.35¢, Chicago. Jobbers are quoting small lots from stock at 1.30¢ and upward for Bar Iron, and 1.50¢ and upward for Soft Steel Bars, according to quantity. They report a fair demand.

**Structural Material.**—The only trade in progress is in small lots, for which the demand continues up to the capacity of the local yards. Quotations on mill shipments, Chicago delivery, are as follows: Beams and Channels, 1.50¢; Tees, 1.65¢; Angles, 1.45¢; Universal Plates, 1.45¢. Small lots from stock sell at 1.80¢ @ 1.90¢ for Beams, 1.50¢ @ 1.60¢ for Angles, and 1.70¢ @ 1.80¢ for Tees.

**Plates.**—Manufacturers' agents report quiet business. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.45¢ @ 1.50¢; Flange Steel, 1.65¢ @ 2.10¢; Fire Box, 2.50¢ @ 5¢. Jobbers are having a good trade from stock. Orders are coming in from sections that in ordinary times do not look to Chicago for their supply. Boiler Tubes are very firm and an advance is expected. Store prices are as follows: Iron or Steel Sheets, Nos. 10 to 14, 1.80¢ @ 1.90¢; Tank Steel, 1.65¢ @ 1.85¢; Flange Steel, 2.10¢ @ 2.35¢; Boiler Tubes, in carloads, 75 % off.

**Sheets.**—Black Sheets are scarce for immediate delivery, and the same con-

dition has extended as a consequence to Galvanized Sheets. The number of mills running has been cut down considerably on account of the scarcity of fuel, and business has concentrated on the active mills, so that they are now very full of work. It is difficult to quote prices for early deliveries at the convenience of the manufacturers. Prices on mill shipments, Chicago delivery, are as follows: Common Stove Pipe Iron, No. 27, 2.35¢ @ 2.40¢; Soft Steel Sheets, 2.50¢ @ 2.55¢; Galvanized Iron, 75 and 10 % off. Sheet Copper is still quiet at 14¢ to large buyers, with no discount.

**Merchant Steel.**—Conditions are unchanged. We quote mill shipments, Chicago delivery: Smooth Finished Machinery and Tire, 1.70¢ @ 1.80¢; Open Hearth Spring Steel, 1.85¢ @ 1.90¢; Bessemer Machinery, 1.55¢ @ 1.60¢; Bessemer Tire, 1.45¢ @ 1.50¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

**Billets and Rods.**—The Billet market has been active, with sales aggregating about 8000 tons for July delivery. Quotations are now \$18.25 @ \$18.50 in consequence of the easier prices at Eastern works. Wire Rods are in considerable demand, but buyers and sellers are somewhat apart in their views. They are held firmly at \$25 for July and August delivery.

**Rails and Track Supplies.**—Orders have been booked for Steel Rails about equal to the weekly output of the local mill, which is consequently well supplied with work now projecting into the fall months. Quotations for standard Steel Rails are \$25 @ \$27; Steel Splice Bars, 1.35¢ @ 1.40¢; Track Bolts with Hexagon Nuts, 2.10¢ @ 2.15¢; Spikes, 1.75¢ @ 1.90¢; Links and Pins, 1.65¢ @ 1.70¢.

**Old Rails and Car Wheels.**—A round lot of Old Iron Rails was sold at about equal to \$10, Chicago, for shipment to an Eastern point. Old Steel Rails are quiet, with nominal quotations \$6.50 for short pieces, and \$9.50 @ \$10 for long lengths. Old Car Wheels are stagnant, with nominal quotations continued at \$10 @ \$10.50.

**Scrap.**—Little business is doing, but hardly sufficient to enable dealers to realize that they have any existence as a factor in the market. Prices are weak with sales made occasionally at 25¢ @ 50¢ below our quotations. Dealers quote the following selling prices @ net ton; Railroad Forge, \$9; Dealers' Forge, \$8 @ \$8.50; No. 1 Mill, \$6.50; Pipes and Flues, \$6; Heavy Cast, \$7 @ \$7.50; Stove Plate, \$5 @ \$5.50; Fish Plates, \$10; Horseshoes, \$9; Mixed Steel, gross ton, \$5.50.

**Metals.**—Carloads of Lake Copper are quoted at 9½¢ and casting Copper 9¼¢. The movement in Copper has latterly been a little larger. Spelter is unchanged at 3.25¢ @ 3.30¢, with the market quiet. A considerably better demand has developed for Pig Lead, which is now quoted at 3¼¢.

Samuel A. Sague, formerly secretary of the Cleveland Steel Company, has opened offices in the Western Reserve Building, Cleveland, Ohio, and is doing business as general broker in Iron and Steel products. Mr. Sague has also been appointed general agent for the Cambridge Iron & Steel Company, Cambridge, Ohio.

## Financial.

Two causes of encouragement which have developed during the week have contributed to impart a more hopeful hue to the business outlook. On Monday, the coal operators and miners, in conference at Columbus, reached an agreement by which work is to be resumed on a basis of compromise; and, although the agreement has been received with dissatisfaction by the strikers in some quarters, the prospects appear favorable for an early resumption of work in the mines. This circumstance will tend to remove the difficulties now experienced by railroads and industries in various parts of the country owing to the scarcity of fuel supplies. It will also have a far reaching effect on general business, which has received a serious set back from the extended stoppage of works and the consequent difficulty experienced by manufacturers in various lines in filling orders. The other favorable feature in the situation is the surprisingly rapid progress made by the Senate with the tariff bill during the past few days. It appears as if that legislative body had at length awakened to the fact that their dilatory treatment of the measure has been exercising a most baneful influence on the business of the country, and that they are trying to railroad the bill through in order that it may be returned to the House as soon as possible so as to have it off their hands before the close of the fiscal year. Although the passage of the tariff bill in the Senate will not finally settle the matter, it is thought likely that its treatment by the House will be prompt.

For this reason the general public, which has been contemplating with impatience the long series of vexatious delays, is inclined to look with relief on the prospects of its passage into law in some shape or form, as being preferable to an indefinite duration of the present state of uncertainty. A better feeling in financial circles has been caused, too, by the defeat in the House last week of the unconditional repeal of the 10 % tax on State banks.

Gold exports continue on a sufficiently heavy scale to cause anxiety as to the depletion of the Treasury reserve of the metal. Last week \$6,150,000 were taken by European steamers, all of which was withdrawn from the Treasury. On Tuesday \$1,000,000 more were shipped. Wednesday \$1,250,000 were ordered. By these operations the Government gold reserve has been reduced to \$68,000,000, which is below the amount held when the last issue of bonds was made. Yet the Treasury officials believe that there is no cause for apprehension, nor any necessity for a further issue of bonds. Meanwhile the customs receipts of the country show a decline. The Treasury statement, issued on June 11, shows that the receipts for customs at New York for the first ten days of this month aggregated only \$1,605,035, the lowest for any ten days since 1892, and less by about \$1,000,000 for the corresponding days of June, 1893. Of this amount, moreover, only 1 % was paid in gold and 86.8 % in silver certificates. Customs receipts in general were 36 % less for last week than a year ago, and internal revenue 23 % less.

Reports of railroad earning, as might be expected under the circumstances, continue to show a decrease. The *Financial Chronicle* estimates the gross earnings of 55 roads for the fourth week in May at \$6,286,676, a decrease of \$1,296,778, or 16.88 %, and gross earn-

ings of 80 roads for the month of May at \$23,618,837, a decrease of \$5,107,072, or 17.97 %. Bank clearings for May do not show quite so great a proportionate decrease. The falling off from May of last year was 26.5 %, as against 25.1 % decrease for April and 30.8 % for March.

The continued influx of gold from the interior serves to balance the general cash holdings of the banks against the gold exports. Last Saturday's statement of the associated banks exhibited a considerable falling off in deposits and a shrinkage of \$1,361,400 in the surplus reserve, which, however, still amounts to nearly \$77,000,000, as against \$14,000,000 a year ago. Loans showed a slight increase. The report of the condition of the national banks, made by the Comptroller of the Currency for May 4, shows an encouraging increase in loans and deposits. There is no material change in circulation.

The money market shows no particular change. If anything, the offerings of capital are more abundant, time loans being in especially large supply. Money is easy at 1 % on call. Time money is freely offered by banks and trust companies at the following rates: 1 % for 30 days, 1½ % for 60 days, 2 % for 90 days, 2½ % for four months, 3 % for longer periods. The demand is, however, only moderate. Mercantile paper of high grade continues in good demand, but inferior lines find only a limited market. Rates are quoted at 2½ % @ 3 % for prime indorsements, 3 % @ 3½ % for first class single names four months to run, and 4 % @ 5 % for others.

Outside of Sugar and Chicago Gas, the fluctuations and dealings in which are never regarded as having any significance, or bearing on the general market, speculation in the Stock Exchange has not risen above the commonplace level of the past few weeks. Prices show but a trifling change from those quoted a week ago. Of the railroad stocks, St. Paul has been the most active, but transactions in railroad securities have been, in the whole, comparatively unimportant. The reduction of dividend on the shares of New York, New Haven & Hartford announced on Monday, and the statement of the road's president that the last three quarterly dividends had been paid only by drawing on the surplus, had an unfavorable effect on the railroad list generally, most issues showing a fractional decline. Some more favorable influences on Tuesday, however, tended to restore their strength. These included the expected settlement of the coal strike, and a sharp rise in wheat. Manhattan declared its usual quarterly dividend of 1½ % and the Executive Committee of the Western Union Telegraph Company recommended the declaration of the usual 1½ %, which they say has been earned. The market closed strong on Wednesday. The following list shows the extreme fluctuation of the more active stocks since June 6, with the closing prices on Wednesday, 13th:

	High- est.	Low- est.	Closing June 13.
Am. Sugar Ref.....	107½	100½	101½
Atchison, T. & S. F.....	8½	7½	8½
Chicago Gas.....	78½	75½	78½
Chic., B. & Q.....	79½	75½	78½
Chic., Mil. & St. Paul.....	61½	59½	61½
Distilling & Cattle Fdg.....	27	25½	25½
Gen. Electric.....	38½	35½	37½
Louisville & Nashville.....	46½	45	46½
Manhattan.....	117½	115	116½
Missouri Pacific.....	29	27½	28½
National Lead, Common.....	41½	37½	38½
Northern Pacific, Pfd.....	17½	15½	17
Philadelphia & Reading.....	17½	17	17½
Tennessee Coal & Iron.....	19½	17½	19½
Western Union.....	85½	84½	85½

The bond market has shown a better business during the week than the stock market. Railway and miscellaneous bonds were strong, with active inquiry for good investment lines. Prices have risen in most lines. Government bonds have been firm and moderately active. The closing quotations on Wednesday were as follows:

	Bid.	Asked.
2's, 1891, registered.....	96	.....
4's, registered.....	112½	113½
4's, coupon.....	114½	115
5's, registered.....	117½	118½
5's, coupon.....	117½	118½

The market for sterling has been dull. There has been no variation in rates, but a slightly weaker tone developed on Tuesday. Inquiry from remitters is tame and the supply of bills moderate. Actual business was done on Wednesday at \$4.87½ for 60 days; \$4.88½ for demand; \$4.89 for cables, and \$4.86½ for commercial. Domestic exchange on New York is quoted as follows: New Orleans, commercial 100 premium, bank 150 premium; Charleston, buying par, selling ½ premium; San Francisco, sight 10, telegraph 15 premium; Savannah, buying par, selling ½ premium; Chicago, 70 premium; Boston, par to 3¢ premium.

Bar silver advanced at the end of last week to 28½ pence per ounce in London and 62½¢ in New York. A slight decline has occurred this week, but the position of the metal appears to be stronger than of late. Shipments of silver to Europe during the past week have amounted to 500,000 ounces.

Returns of failures for last week collected by Dun's Agency show a gratifying decrease. They amounted to 216 in the United States, as against 322 last year. The liabilities in all failures reported in the month of May were \$13,305,357, about \$5,420,000 at the East, \$1,500,000 at the South and \$3,400,000 at the West. Of the aggregate \$5,165,025 was of manufacturing and \$6,683,499 of trading concerns.

## Metal Market.

**Pig Tin.**—Prices have receded to about the parity of 19.65¢, net cash, for Straits in lots of 5 tons or more. In fact, business has been done on that basis of price within a very few days. The deal was speculative, no doubt, and may have been in the nature of a pre-arranged affair, but it nevertheless gave a good idea of actual market value. In any event the consumptive demand for the metal, like that for other prominent articles of merchandise, has been very tame of late, while port statistics show more or less considerable addition to surplus supply. Arrivals at foreign ports have also been quite heavy, and while more or less shifting of stock has taken place the visible supply for this country and Europe is kept at about 19,000 tons, or above the average. In other words there is an abundance of Tin, and evidence is wanting of any considerable "short" interest in the market.

**Copper.**—The recent large sales of Lake Superior Ingot will, it is estimated, involve upward of 25,000,000 lb. The sellers have in a measure regained custom that manufacturers of Electrolytic Copper latterly diverted to greater or less extent, and even gone into fields that smelters of casting Copper had considered as their exclusive territory. In other words, two or three Lake Superior companies have between them made an unusually broad sweep. The



business was mostly, if not all, at about 9¢, as previously reported. Electrolytic is now at about 8½¢, and ordinary casting stock at 8¼¢; but most sellers claim that purchases cannot be made at those prices for shipment prior to July or August.

**Pig Lead.**—Several hundred tons of Western desilverized Lead have been placed at 3 27½¢ @ 3.30¢, delivered here or at common point, early shipment from producing points. Moderate quantities from stock stored uptown went at 3 25¢. Buying has not been free or general, but enough business passed to give the market quite steady tone. Probably 500 tons have changed hands during the week, and a lower price than 3.30¢ is purely exceptional at this writing.

**Spelter.**—Sellers offer less freely, and it is doubtful if prime Western can now be secured at less than 3.45¢ @ 3.50¢ laid down here. In any event orders at 3.40¢ have been turned down during the past few days, and it is noticeable in this connection that the orders were almost uniformly for single carloads. To all appearances 3.50¢ is a close price for good brands in carload lots at the present time.

**Antimony.**—Except in a jobbing way the movement is very slow, but supplies are well taken up and prices remain quite steady at 10¢ @ 10½¢ for Cookson's, 8¼¢ @ 8½¢ for Hallett's, and 9½¢ @ 9¾¢ for L X on the spot.

**Nickel.**—The range of 45¢ @ 50¢ is quoted for fair sized lots.

**Tin Plate.**—The market has not improved materially. Probably orders for future deliveries show some increase, but the movement is slow for the season and prices are still rather weak. The following prices are quoted for spot stock: Charcoal: Melyn grade, IC, \$6 25; do., Melyn grade, Crosses, \$7.75; do., Allaway grade, IC, \$5 40; do., Allaway grade, Crosses, \$6 45; do., Grange grade, IC, \$5.50; do., Grange grade, Crosses, \$6 60; do., Terne, M.F., 14 x 20, \$7 25; do., M.F., 20 x 28, \$14.50; do., Worcester, 14 x 20, \$5 70; do., 20 x 28, \$11; Alyn grade, 14 x 20, \$5.20; do., 20 x 28, \$10 @ \$10.25; D. R. D. grade, 14 x 20, \$4 90; do., 20 x 28, \$9.70. IC Coke: Penlan grade, \$5; do., J. B. grade, 14 x 20, full weight \$5.15; do., 100 lb \$4.75; do., 95 lb, \$4.62½; do., 90 lb, \$4.55. IC Bessemer Steel, Coke finish: 14 x 20, full weight, \$5.15; do., 100 lb, \$4.70 @ \$4.75; do., 95 lb, \$4 60; do., 90 lb, \$4.50. IC Bessemer Steel, Coke finish, sq., \$5.35. IC Siemens Steel, Coke finish, sq., \$5.45. Wasters: S. T. P. grade, 14 x 20, \$4.60; do., S. T. P. grade, 20 x 28, \$9; do., Albearne grade, 14 x 20, \$9.

## New York.

Office of *The Iron Age*, 96-102 Reade street, }  
New York, June 13, 1894. }

**Pig Iron.**—The demand continues moderate, and is covered quite readily at old prices. We print elsewhere the new rates of freight which are to go into effect on the 15th. It will be noted that the rail and water rates to leading points from Southern furnaces are still very low. We quote standard brands \$12.50 @ \$13 for No. 1; \$11.25 @ \$12 for No. 2, at tidewater. Southern Iron, same delivery,

\$11.50 @ \$12.25 for No. 1; \$10.50 @ \$11 for No. 2; \$10 @ \$10.25 for No. 3; \$10.25 @ \$10.75 for No. 2 Soft, and \$10.50 @ \$11 for No. 1 Soft. Foundry No 4 (Foundry Forge) is \$9 75 @ \$10.25; Bessemer Pig, prompt delivery, \$12 @ \$12.50, at furnace.

**Cast Iron Pipe.**—The market is fairly active, although the close of the season is approaching. There has been a relatively heavy consumption this year of the smaller sizes. The largest contract in sight now is that for Rochester, which calls for 6000 tons, chiefly large sizes. Among the contracts recently closed is one for 1500 tons for Ipswich, Mass., and one for 300 tons for New Rochelle, N. Y., both taken by Anniston.

**Ferromanganese.**—We continue to quote \$52 @ \$52.50 for foreign Ferromanganese in small lots.

**Steel Rails.**—The market is very dull, no transactions of any magnitude having been closed by the Eastern mills. We quote \$24.80 at tidewater for standard sections.

**Track Material.**—We quote as follows for small lots: Spikes, 1.50¢ @ 1.70¢; Fish Plates, 1.20¢ @ 1.40¢; Track Bolts, Square Nuts, 2¢ @ 2.10¢, and Hexagon Nuts, 2.10¢ @ 2.30¢, delivered.

**Billets and Rods.**—The market is quiet with quotations nominally at \$19 @ \$19.50 for domestic. Wire Rods are \$27 @ \$27.50, tidewater.

**Manufactured Iron and Steel.**—No contracts of magnitude have been placed during the last week in this vicinity. It is expected, however, that the work for the Fidelity Building will soon be given out. The contract for the Presbyterian Home has not yet been let. Fair prices are obtained for what is being sold for immediate delivery, but the volume of this kind of business is small. On Cotton Ties freight rates in the Southern territory appear to be demoralized. We quote: Beams up to 15-inch, 1.40¢ @ 1.50¢ for round lots; Angles, 1.30¢ @ 1.35¢; Universal Mill Plates, 1.25¢ @ 1.35¢; Tees, 1.50¢ @ 1.60¢; Channels, 1.40¢ @ 1.50¢, on dock. Steel Plates are 1.80¢ @ 1.35¢ for Tank; 1.40¢ @ 1.45¢ for Shell; 1.60¢ @ 1.65¢ for Flange, and 1.75¢ @ 2¢ for Fire Box, and 2¢ @ 2.25¢ for Locomotive Fire Box, on dock; Refined Bars are 1.20¢ @ 1.9¢, on dock, and Common 1.10¢ @ 1.20¢; Soft Steel Bars are 1.20¢ @ 1.30¢; Scrap Axles are quotable at 1.35¢ @ 1.50¢, delivered; Steel Axles, 1.35¢ @ 1.50¢, and Links and Pins, 1.40¢ @ 1.60¢; Steel Hoops, 1.40¢ @ 1.50¢, delivered; Cotton Ties, 60¢ @ 70¢ @ 45 lb bundle, tidewater; Machinery Steel, 1.20¢ @ 1.40¢; Toe Calk, 1.80¢ @ 1.90¢, and Sleigh Shoe, 1.60¢ @ 1.75¢, delivered.

**Old Material.**—Holders of Old Steel Rails, long lengths, subject to rigorous inspection, are asking \$10. We note sale of 1000 tons of Scrap to mill on line of road at \$9 50, delivered, and 1000 tons same for delivery to a more distant market. A lot of 300 tons of Old Axles has sold at \$13.50 at interior point.

**Pig Iron Warrants.**—The American Pig Iron Storage Warrant Company have issued the following statement for June 6:

	Tons.
Stock in yard April 30, 1894.....	97,400
Put in yard for 31 days, ending May 31, 1894.....	2,500
Total.....	99,900
Withdrawn, 31 days, ending May 31, 1894.....	1,500
Net stock in yard May 31, 1894.....	98,400

## British Metal Market.

[Special Cable Dispatch to *The Iron Age*.]

LONDON, WEDNESDAY, June 13, 1894.

Prices for Straits Tin moved up early in the week to £71. 10/. From that point there was a fall to £71. The early advance was due in a good measure to purchases for American account and local speculative buying. With this demand supplied a reaction took place under which prices receded to £71 for prompts. Speculative transactions were moderate at the decline and consumers purchased very sparingly also, in view of advices to the effect that Straits shipments have been about 1500 tons since the beginning of the month. At the end of the week under review the market was weak, with prices at about £70. 5/ for prompts and £70. 12/6 for three months' futures.

Copper prices have declined to the extent of about 10/ on Merchant Bars, or to £38. 10/ for prompts. There was quite good buying early in the week for account of American operators, but demands were redily met and dealings have been mostly in g.m.b. futures showing disposition to realize. At the close the market was steady. Merchant Bars were quoted at £38. 10/ for prompts, £38. 17/6 for three months' futures, and Best Selected English at £41. 15/.

In the Tin Plate market there has been an improved business at somewhat better rates, chiefly three months' futures at full rates. Makers hesitate to book orders for far forward delivery in the face of stiff bids made by buyers for distant future shipments. Bessemer Cokes have advanced about 1½ pence during the week, and larger demand has raised the price of Terns to 19/ for double box. Black Plate for prompt delivery is at a premium. The Morfa Works have been restarted. Exports last month were 30,000 tons, against 37,000 tons in May, 1893. Shipments to the United States were 21,000 tons and 26,000 tons respectively. Stocks at Swansea are 288,000 boxes.

Exports of Pig Iron last month were 71,000 tons, against 94,000 tons in May, 1893. Warrants have undergone very little change. Latest dealings were at 41/7 @ 41/8 for Scotch, 35/1½ @ 35/3 for Cleveland and 44/ for Hematite.

Pig Lead has found slow sale, but the price has remained quite steady—£9. 2/6 for Soft Spanish.

Spelter is selling slowly and prices are easy at £15. 10/ for ordinary Silesian.



### Simple Remedy for Trouble in a Telephone.

The following letter to the *Electrical World* is pertinent at the present time when telephonic communication between the several departments of manufacturing establishments is becoming so common:

"A friend of mine in a neighboring establishment has a telephone containing three ordinary Bell receivers, which are used both as transmitters and receivers. They gave trouble constantly. One would be reported as 'not talking,' and he would take off the cap and find nothing wrong, would put the cap back again and it would work all right. Perhaps in an hour or so it would again refuse to act. This was kept up for several months. He tried varying the distance of the diaphragm from the magneto, and also examined the circuit time and again, but with no better success. One day we noticed that the edge of the orifice of the cap came very close to the diaphragm, and I suggested that perhaps a drop of saliva might lodge against the diaphragm and the edge of the orifice and impede vibration. This was found to be the case, and a ring of thick cardboard placed between the cap and the diaphragm remedied the trouble completely."

**Southern Pig Iron Freights.**—The Queen & Crescent Ryte has issued east bound pig iron tariff No. 6, effective June 15, giving rates on pig iron in car-load lots from Southern furnaces to the following points:

To	From Dayton and Rock- wood, Tenn.	Chattanooga, Tenn.	Rising Lawn, Ga., and Fort Payne, Ala.	Birmingham dis- trict.
Connecticut (all points).....	\$5.00	\$5.25	\$5.50	\$5.50
Wilmington, Del. . .	4.27	4.27	4.52	4.52
Maine (all points)....	5.00	5.25	5.50	5.50
Baltimore, Md. (rail and water).....	3.54	.....	3.59	3.50
Baltimore (all rail)....	4.00	4.00	4.11	4.11
Washington, D. C. . .	3.76	3.76	4.01	4.01
Massachusetts (all points; all rail)....	5.00	5.00	5.50	5.50
Boston (rail and water).....	3.89	.....	3.85	3.85
New Hampshire (all points).....	5.00	5.25	5.50	5.50
Elizabethport, N. J. . .	4.62	4.62	4.87	4.87
* Jersey City (rail and water).....	3.54	.....	3.50	3.50
Jersey City (all rail)....	4.76	4.76	4.87	4.87
Albany, N. Y. . . . .	4.44	4.44	4.94	4.94
Elmira, N. Y. . . . .	4.00	4.25	4.50	4.50
Lockport, N. Y. . . .	3.58	3.81	4.06	4.06
* New York (rail and water).....	3.54	.....	3.50	3.50
New York (all rail)....	4.76	4.76	4.87	4.87
Rochester, N. Y. . . .	3.56	3.81	4.06	4.06
Syracuse, N. Y. . . . .	3.80	3.69	4.30	4.30
Troy, N. Y. . . . .	4.44	4.05	4.30	4.30
Utica, N. Y. . . . .	4.20	4.44	4.70	4.70
Allentown, Pa. . . . .	4.41	4.41	4.52	4.52
Chester Pa. . . . .	4.27	4.27	4.52	4.52
Harrisburg, Pa. . . .	3.56	3.56	3.81	3.81
Lancaster, Pa. . . . .	3.91	3.91	4.16	4.16
Philadelphia (rail and water).....	3.54	.....	3.50	3.50
Philadelphia (all rail)....	4.41	4.41	4.52	4.52
Pottsville, Pa. . . . .	4.32	4.32	4.57	4.57
Reading, Pa. . . . .	4.27	4.27	3.52	3.52
Scranton, Pa. . . . .	4.20	4.45	4.70	4.70
Rhode Island (all points; all rail)....	5.00	5.25	5.50	5.50
Providence, R. I. (rail and water)....	3.89	.....	3.85	3.85

\* In addition to above charges the cost is as follows: In lots of 50 tons and less, 60 cents per ton; over 50 tons, 50 cents per ton. † The above rates cover pier delivery only. Additional charge within lighterage limits is as follows: In lots of 50 tons and less, 60 cents per ton; over 50 tons, 50 cents per ton.

The all rail rate on the Louisville & Nashville Railroad is \$5.39 from Chat-

tanooga to Boston. The rate from Big Stone Gap, Va., to Harrisburg is \$3.06. To Newark, N. J., it is \$4.87 from Birmingham, \$4.62 from Chattanooga, and \$4.12 from Big Stone Gap. The all rail New York rate is \$5.10 from Birmingham, \$4.85 from Chattanooga and \$4.35 from Big Stone Gap, Va. The all rail rate to Philadelphia is \$4.52 from Birmingham, \$4.41 from Chattanooga, and \$3.91 from Big Stone Gap.

### The Manufacture of Briquette Fuel.

At a recent meeting of the Institution of Civil Engineers a paper on this subject was read by William Colquhoun. The paper contained a description of the various English and Continental methods of agglomerating slack coal, which has now become an important and increasing industry and opens up an outlet for large quantities of small coal hitherto lost on the pit bank or in the workings. Various agglomerating agents are detailed and their local advantages discussed; the characteristics of good pitch derived from coal tar render that agent, however, in every way the most suitable. By the use of from 8 to 9 per cent. of pitch, slack coal may be agglomerated into a form eminently suitable for storage purposes, water proof, incapable of deterioration on exposure, of cohesion greater than the large coal from which it is derived, and, finally, having calorific qualities nearly equal to large coal. In support of the latter contention the author cites the results of three experiments with English briquettes, which gave 8.41 pounds, 8.77 pounds and 8.99 pounds, respectively, as the weight of water evaporated from and at 212° F. per pound of fuel. The average evaporative power of several of the best Welsh steam coals was 9.33 pounds. Careful experiments made by Mr. Marié on the Paris, Lyons & Mediterranean Railway gave as corresponding figures for three descriptions of French briquettes, 8.88 pounds, 9.15 pounds and 8.68 pounds, respectively.

The mechanical preparation of the coal used in briquette manufacture receives more attention on the Continent than in England, particularly in regard to the washing and subsequent drying of the slack. These operations are necessary in order to render the poorer coals serviceable for the manufacture. The draining and drying appliances in use are described, particularly those of Jacoby of the Molière Collieries, and of Biétrix, the latter being described in detail and instances given of the working cost. The coal and pitch are intimately intermixed by two methods, known respectively as the melted and dry pitch processes, the pitch by the former being melted, sometimes with additions of common tar, prior to its addition to the coal, and by the latter being ground up with the coal in a dry state. Several examples are given of the procedure in each case. In both instances the mixture of coal and pitch is subjected to the action of heat until each particle of coal is covered with a film of melted pitch, and so rendered fit for compression into blocks. In this state the mixture or paste contains from 3 to 5 per cent. of water in order to facilitate the sliding of the particles of coal one on the other during compression.

The machines for compressing the paste are roughly divided into three classes, irrespective of the nature of the power employed. These classes are: 1. Single compression machines, illus-

trated by detailed descriptions of the Mazeline, Stevens and Dupuy presses. 2. Machines compressing on both sides of the briquette, such as those of the Middleton, Biétrix and Veillon. 3. Machines acting by the tangential pressure of rolls, like that of Fouquemberg and those of the sausage machine type, such as the Bourriez press. Briquettes hot from the press have an inconsiderable cohesion and have to be treated with care in stacking and loading, and arrangements made to keep down the cost of labor. Costs were given of making briquettes in works in England, in the North of France and in Belgium, the cost of labor, fuel, supplies and maintenance, not inclusive of the cost of material agglomerated, being 2 shilling and 1½ pence, 1 shilling and 9 pence and 2 shillings and 6 pence, respectively.

Instances were cited of the suitability of the same process for the agglomeration of charcoal dust, sawdust, coke breeze, friable iron ores and cement.

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# HARDWARE.

## Condition of Trade.

**T**HE USUAL FALLING OFF in the volume of business which is noticeable in the middle of June is this year increased somewhat by the prevailing quietness in trade, and as a result merchants and manufacturers refer to business as dull. A good many travelers are home, but there is still a good force on the road. Orders for the most part are carefully assorted and considerably smaller than usual, the trade being careful to restrict their purchases to their actual requirements. There is little new in the matter of prices, and on the general line of Shelf Hardware the market is low and somewhat uneven. Manufacturers, especially in heavy goods, are carefully booking orders for future delivery, realizing that there may a change in existing conditions. The trade are looking forward to a quiet business during the next month or two, but hoping that if tariff questions are settled and financial matters are not disturbed there will be a good trade in the fall.

The following letter from Farwell, Ozmun, Kirk & Co., St. Paul, was intended for use in our last issue, but was received after we had gone to press:

Business is showing the usual impulse of the season to some extent and our jobbers have an increased number of orders, but there is not sufficient increase to bring the volume of trade up to that of May, 1893, and this is true notwithstanding the fact that during May of last year the effects of the panic had begun generally to affect business. The trade is also running along more uniformly than was true earlier in the season, and it is now free from any spasmodic features.

The difference is now but little in the sales of corresponding months of the two years, and by July it is reasonably to be expected that the balance on sales per month will be considerably in favor of the present year. This will certainly be true if the crops come on anywhere nearly as favorable as they now promise.

On the whole the jobbing interests of the Northwest are doing fully as well as expected in amount of trade, and this is to be measured with the fact in view that credits are now more carefully scrutinized than ever before. With anything like fair crops jobbers expect very light losses through bad debts.

Prices have advanced on Nails, and the market is firm at present. As to what will be the more lasting effect of the coal strike on the price of Nails and other staples, it is a matter of

speculation, but it is certain that for some time to come the price will be affected to some extent. Prices on Barbed Wire and Tin Plate are firm.

The market here is following the advance on Rope. Collections are up to expectations and are fair for the season.

### Chicago.

(By Telegraph.)

The movement in Shelf Hardware continues about the same as reported last week. The present week has opened up fairly well with a good number of orders coming in from traveling salesmen and also in ordinary mail. The month is expected to show up about the same as May, notwithstanding the increased sales during a part of that month on account of the freight flurry. No special change has occurred in prices of either Shelf or staple goods. The Heavy Hardware trade is fair and moves along steadily from week to week at about the same volume. Jobbers are now receiving the benefit of the failure to make future contracts last spring by the Wagon and Carriage manufacturers. They are coming into the market regularly for their purchases of material, thus contributing their share of swelling the current volume of business. Collections are good and payments are being more promptly made than usual within the regular times fixed for credits.

### St. Louis.

(By Telegraph.)

The demand for Hardware has been checked by the extreme warm weather which is at present prevailing throughout this section. In some lines, especially hot weather goods, a heavy trade is reported. The season has been backward and the year's business in Gasoline Stoves, Refrigerators, Ice Cream Freezers, &c., is likely to fall behind past years. The general disposition has been for the past year and still is to buy only as immediate needs require and watch for something to turn up. There is a feeling of hesitancy prevailing among manufacturers, jobbers and retailers alike. None of them appear satisfied what to do. Those who had courage to purchase heavily, thinking the turn had come, found themselves with heavy stocks and a steadily declining market; and as a burnt child dreads the fire, so these dealers are now holding aloof and patiently watching and waiting for a turn in the tide. In the mean time the situation fails to improve and July and August, two of the dullest months of the year, are likely to make a record for dullness not reached for many years past and it is to be hoped that will not be again reached for

many years to come. Collections are good, but this is accounted for when it is stated that there is not much to collect.

## Notes on Prices.

**Wire Nails.**—The Wire Nail market continues firm, with a fair though not heavy amount of business. Quotations are well maintained on the basis of \$1.10 to \$1.15 for carload lots, f.o.b. mill. Small lots from store in New York are held at \$1.25 to \$1.30.

**Chicago, by Telegraph.**—Manufacturers are receiving some inquiries, but they are by no means numerous or large. A quiet appears to have set in, which may continue for some time. More factories have shut down for lack of fuel, and a general closing is expected to take place in July as usual. Prices are very firm, on account of the diminished production and increased cost of raw material, as well as advances in freight rates. Quotations now range from \$1.20 to \$1.25, Chicago, for factory lots. Jobbers quote \$1.25 for small lots from stock, and report a fair trade, but no call for carload lots.

**Cut Nails.**—There has been comparatively little change in the Cut Nail market for several weeks, this line not advancing in sympathy with Wire Nails as much as the manufacturers would desire. There is active competition among the mills for such business as is going, and some Western companies are looking aggressively after business in the East, which has the effect of keeping prices lower than they would otherwise be in the territory of the Eastern mills. The demand is fair and the aggregate of orders considerable, although the trade are not buying very freely nor in excess of their actual wants. Sales have been made of Western Nails during the past fortnight at figures which, taking into consideration the present cost of production, are lower than have previously been made. Eastern mills are quoting 95 cents to \$1 for Nails delivered on dock in New York. The store price for small lots in New York is \$1.10 to \$1.15.

**Chicago, by Telegraph.**—The market looks a little firmer. Sales are being made for immediate shipment and manufacturers are not attempting to make contracts for future delivery. Concessions are now refused, and extreme rates current a short time since have been completely withdrawn. Prices quoted by Wheeling manufacturers are higher, but local rates continue at 90 to 95

cents on 55-cent average, with a very fair volume of business reported for the week. Jobbers are having only a light trade in Cut Nails, but continue quotations for small lots from stock at \$1.10 to \$1.15.

**Barb Wire.**—The Barb Wire market is quiet and without new features of importance. The following quotations for Four-Point Galvanized Wire, delivered at the points named, represent the market: Pittsburgh, \$2.10 to \$2.15; Cleveland, \$2.15 to \$2.20; Cincinnati or Allentown, \$2.20 to \$2.25; Chicago or New York, \$2.25 to \$2.30.

*Chicago, by Telegraph.*—Manufacturers of standard Wire have advanced their quotations 5 cents per hundred on account of advancing freight rates and higher cost of raw material. The local makers are still behind in their shipments, but new business shows a marked falling off and is expected to be quiet for some time. Mills generally will be closed for repairs during July. Prices are therefore expected to be maintained at rates now fixed. Plain Wire shows a steadily advancing tendency. Jobbers are having a light trade from stock. Quotations are continued on Galvanized Barb Wire at \$2.35 to \$2.40 for small lots and \$2.20 to \$2.25 for carload lots.

**Cordage.**—The demand is very fair and business is quite active considering the season. The recent advance of  $\frac{1}{2}$  cent per pound in Manila, Sisal and New Zealand has been maintained and the market is characterized by a strong tone. Quotations for large lots, f.o.b. factory or New York, are as follows, subject only to a discount of  $\frac{1}{2}$  per cent. for cash.

	Cents.
Manila, base.....	7
Sisal, ".....	5
New Zealand, base.....	5

**Clark's Anti-Sag.**—This article was described in our last issue as put on the market by W. J. Clark & Co., Salem, Ohio. It is sold to the trade at 75 cents per dozen, net.

**Central Draft Street Lamp.**—A description of this Lamp appeared in our issue of 24th ult., as put on the market by the Rochester Lamp Company, 42 Park place, New York. This Lamp is sold to the trade at \$6 each, subject to a discount of 25 per cent., or at \$72 per dozen, subject to a discount of 40 per cent., 5 per cent. additional being allowed for cash in 30 days.

**Double Tank Thermometer Churn.**—R. M. Ball, Muncie, Ind., is manufacturing this article, which was described in *The Iron Age* May 31. The Churn is sold to the trade at \$42 per dozen, net, f.o.b. Muncie.

**Hammock Tie and Hook.**—The Hammock Tie and Hook illustrated in *The Iron Age* June 7, 1894, and manufactured by the Tie Company, Unadilla, N. Y., is sold at \$9.60, net, per gross pieces. The goods are packed one dozen in a box.

**Scrapers.**—The Scraper which is being introduced by Harris E. Thomas, Lansing, Mich., an illustration of which was given in our last issue, is sold at \$2 per dozen, or \$20 per gross, net.

**Telephones.**—The Telephone outfit described in *The Iron Age* June 7, and manufactured by Robert H. Ingersoll & Brother, 65 Cortlandt street, New York, is sold at \$7.50; subject to a discount of  $\frac{3}{4}$  per cent.

**Sheet Zinc.**—Matthiessen & Hegeler Zinc Company, La Salle, Ill., issue a revised discount sheet under date of May 28. The base price, \$4.50 per 100 pounds, continues unchanged, but revised discounts are announced as follows:

Discounts.	First class. 15 600-pound casks and up- ward.	Second class. 10 to 14 600- pound casks.	Third class. 5 to 9 600-pound casks.	Fourth class. Under 5 600- pound casks.
	Per cent.	Per cent.	Per cent.	Per cent.
Special .....	7	7	7	7
Cash with order.....	3	3	3	3
Quantity .....	3	2	1	0
Totals.....	13	12	11	10

Under date of May 30 they issue another circular in which changes in the extras, in cents per 100 pounds, are announced as follows, the discounts mentioned above remaining unchanged:

	Nos.	5	6	7	8	9	10	11	12	13	14	15
32 } to 40 } x 84.....		70	40	25	05	.....	.....	.....	.....	.....	.....	.....
32 } to 46 } x 84.....		.....	.....	.....	.....	none	none	none	none	none	none	none
32 } to 46 } x 90.....		.....	.....	.....	.....	none	none	none	none	none	none	none
52 x 84.....		210	90	75	60	40	40	40	40	40	45	45
50 x 84.....		140	70	50	30	20	20	20	20	25	25	25
48 x 108.....		110	80	65	45	20	20	20	20	25	25	25
48 x 96.....		90	40	35	15	15	15	15	15	15	15	15
48 x 84.....		230	125	75	25	20	05	05	05	05	05	05
36 x 108.....		150	130	70	35	30	20	20	20	20	20	20
36 x 96.....		125	60	35	20	15	05	05	05	05	10	10
30 x 84.....		100	65	45	25	15	15	15	15	15	15	15
28 x 84.....		110	75	55	30	20	20	20	20	20	20	20
26 x 84.....		130	85	65	40	30	25	25	25	25	25	25
24 x 84.....		140	100	80	20	15	05	05	05	05	05	05

The extra on No. 4 36 x 84 is \$1.25 per 100 pounds.

**Glass.**—Local Glass trade is reported as being light, while from Glass centers we learn that Glass is in fair demand. Prices continue firm, and manufacturers as a rule are not making concessions to induce trade. Factory quotations in car lots are reported from Pittsburgh as follows: Single strength, 80 and 10 and 5 per cent. discount; double strength Glass, 80 and 20 per cent. discount. French window Glass is reported firm at 80 and 10 per cent. discount for single or double strength, in any quantities. Plate Glass is in fair demand, the imported article being quoted at 70 and 10 per cent. discount.

THE ADVERTISEMENT of Griffith, Ax-tell & Cady Company, Holyoke, Mass., in this issue calls attention to their Catalogue E, which shows original embossed cover designs. The company design and make catalogues complete, including engravings, and make the point, which will be generally conceded, that an elegant trade catalogue

attracts attention and makes customers.

## A Hardwareman's Flag Raising.

THE RAISING OF A FLAG over the store of N. P. Hayes, Hardware merchant, of New Bedford, Mass., on the evening of the 22d ult., was attended by exercises of an exceptional character and has served to bring Mr. Hayes very prominently before the people of that city as a patriotic citizen and enterprising business man. The flag raising was conducted by the local Grand Army posts, who had been invited to do so by Mr. Hayes. It is stated that this is the first time, at least in that section of the country, that the Grand Army of the Republic men have been invited to participate in

an affair of this kind. At 7 o'clock in the evening a procession was formed comprising Posts 1, 146 and 190, and Camps 35 and 130. These were followed by a carriage containing the Mayor of New Bedford, the president

of the local Board of Trade, George W. Penniman, the orator of the occasion, and Mr. Hayes. The procession proceeded to Mr. Hayes' store, which had been beautifully decorated with flags, streamers and bunting. A temporary platform erected in front of the second story was hidden behind masses of bunting, tastefully disposed. After Mr. Hayes, with Mayor Brownell and Messrs. Penniman and Soule, had reached the balcony, the band played the "Star Spangled Banner" and the flag was thrown to the breeze. George W. Penniman was then introduced by Mr. Hayes and made a brief address, after which the band played "America" and the procession reformed and proceeded to the Opera House, where an entertainment provided by Mr. Hayes was much enjoyed. In calling the gathering to order, Mr. Hayes made an address which was listened to with the closest interest and attention. Mr. Hayes was followed by George W. Penniman, who with the aid of a stereopticon entertained Mr. Hayes' guests with his lecture, "Our Boys in Blue," which occupied more than two hours and elicited frequent applause. The evening's exercises were brought to a close by the singing of "America" by the entire audience.

## Hardware Organizations.

**THE NEW ENGLAND HARDWARE DEALERS' ASSOCIATION** held a banquet at the United States Hotel on Wednesday evening, June 13. The guests and speakers announced were the Hon. Roger Wolcott, Lieutenant-Governor of Massachusetts; M. J. Woodruff, president of the Russell & Erwin Mfg. Company; Charles E. Adams, president Massachusetts State Board of Trade, and Charles Clark Adams of Boston, representing Sargent & Co.

As already announced, an adjourned annual meeting of the Hardware Club of New York will be held at the club rooms on Thursday, June 14, at 1.30 p.m., when five governors will be elected to succeed those whose terms will have then expired.

## Hardware in Australia.

LETTER FROM  
**POLHEMUS LYON,**

*Our Special Foreign Representative.*  
MELBOURNE, April 13, 1894.

**IT** IS very evident that there is still some money seeking investment in Melbourne. The Board of Public Works invited bids for a 4½ per cent. loan of \$2,500,000 and have local tenders for three times the amount at a little above par. This is encouraging, and so is the great demand from Western Australia for whatever pertains to a mining camp. That country ten days away from Melbourne is absorbing an immense army of the unemployed and the adventurous, and drawing its supplies chiefly from this city.

The wholesale houses have cut down their imports so rigorously for 12 months that this spurt creates a demand in some lines which cannot be supplied. Five hundred dozen Ames' Shovels would go in a whiff if on hand, &c.

There will never be such stocks carried out here again as heretofore. The banks which permitted endless overdraft are going to the other extreme, and the merchants, having very generally been pushed pretty hard to meet engagements, will not be caught again in the same trap.

The policy of many English and other manufacturers of carrying stocks in the colonies for the large houses to draw upon helps materially to this end.

The two largest Melbourne Hardware houses recently canvassed, even to detail, the absorption of one by the other; but this I believe has been found impracticable and all negotiations are off.

It is very interesting to notice how trade in some lines is divided between England and America. A Sheffield manufacturer said to me that he did not think American makers of Elliptic Springs knew how to figure cost. He had bought our Springs, taken them

home and dissected them, finding our selling price lower than their cost.

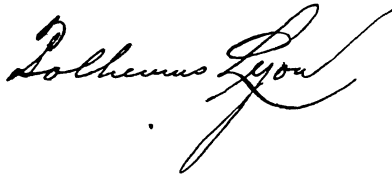
I met a few months ago the secretary of a great English company on a colonial visit. His people are manufacturers of Screws, Bolts and Nuts. He showed me an assortment of American Bolts and Nuts that he was taking home to work over, for the English maker cannot touch us in any sizes up to ¾ x 3 inches, while they get almost all the orders for larger sizes, though our goods are so nicely put up and some lines cut so well as to give us an advantage beyond cost.

This colony has been the leader in Australia in protective duties, general Hardware holding at 35 per cent., except mechanics' tools, which are free. This has proved a rather expensive policy, with eight hours' labor and high trade union wages, but certain it is that the end draweth nigh, and singularly enough, the manufacturers are themselves tired of it. A Parliamentary committee have for weeks summoned before them day by day those interested in the many manufacturing concerns about this city, and rather to the surprise of the public, elicited from these manufacturers a universal expression that they favored a reduction in duty.

I rather think that they find it more profitable to import and sell and repair than to manufacture out of whole cloth.

Of course a lower tariff will prove a great boon to American shippers and add materially to our exports to this colony. Such an example will be the straw which will turn the ballots for reduced duties both in Queensland and in South Australia.

I believe in Protection for Uncle Sam, but here the shoe is on the other foot.



## Advance in the Art of Applying Electricity.

BY W. F. VAN WINKLE.

**T** HIS is an age of progress, and the time is not far distant when electricity will take the place of most all other known agents for power, lights, heating and cooking; electrical inventions will largely decrease the demand for stoves, hot air furnaces, steam and hot water heaters, the trade in which is a very important item to the Hardware business. Hardware merchants should prepare for the inevitable by adding a complete assortment of electrical goods to their stocks and be prepared to do all kinds of electrical work. If possible, they should employ an experienced electrician to manage that department, as their success in the business will depend in a great measure upon knowing how to properly put

in, maintain and repair the different electrical devices.

### THEY SHOULD DISPLAY

their stock of electrical goods in the most conspicuous place in the store, as it will create a demand for them and also attract customers to their store for other goods. One of the most effective ways to display goods of that kind would be to have an upright showcase made for the purpose, lined with velvet, with a cupboard in the base with glass doors, which would accommodate nearly all the stock it would be necessary to keep in that line. There should be a nice margin of profit in the business, and the time is coming when a stock of Hardware will not be complete without electrical goods.

## Home Trade Association.

**O** VER 100 representative business men of the Northwest, including manufacturers, jobbers, &c., recently met at Minneapolis to consider the practicability of organizing an association on the basis of "protection and patronage for home industries." The word "home" embraces the entire section represented, the legend carrying with it the idea of patronizing the manufacturers of that section, prices and quality being the same as those offered elsewhere. This indicates the tendency toward trade organization, the spirit of which, if carried out, cannot fail to benefit those who are directly concerned.

## Letters from the Trade.

**Jobbers and Retailers.**—A retail dealer who makes a specialty of tools of all kinds, referring to the paper by William W. Supplee on the relations between manufacturers and jobbers, as published in *The Iron Age* of May 17 and 24, remarks that it is not always satisfactory for him to buy from jobbers, although he prefers to do so. He cites the following as one of many instances which have made buying from any one of the three jobbers in his city unsatisfactory:

Take for example a No. 8 Disston Saw, \$20 list, from which the jobber allows me 25 and 10 per cent. discount. A customer inquires the price of a No. 8 Saw, which I tell him is \$1.65. I am informed that he can buy the same number and make of Saw down the street for \$1.50 from the jobber from whom I bought, who has now become my retail competitor. Of course I stop buying of that jobber, and shortly he calls on me to inquire if they have offended me in any way, as they notice I am not buying from them as I did. "Oh, yes," I reply, "I am offended, but to my own interest." "Why, what has happened?" inquires the jobber. "Well," I answer, "I can do better elsewhere." "Surely!" cries the jobber, "you are not buying Disston's Saws at better than 25 and 10 per cent. off?" "No, not of the jobber," say I, "but I dislike to buy of a man who makes so little difference in price between a dealer and a retail customer." "What," exclaims the jobber, "have we not a right to retail goods; do you want the earth?" And so the conversation closes.

# Southern Hardware Jobbers' Association:

## The Richmond Convention and the Papers Presented.

IN OUR ISSUE of last week the report of the convention closed with the proceedings of Tuesday, June 5, at which time most of the members were present and participating actively in the discussions and in the committee work, which was so important a feature of the gathering. During Wednesday and the succeeding day there were, however, accessions to the numbers of manufacturers and jobbers from points outside the territory covered by the association, who came to participate in its deliberations and confer with its members. Among these were the following:

D. & H. Scovil, D. Scovil,  
Biddle Hardware Company, James H. Ritter.  
Supplee Hardware Company, W. W. Supplee.  
Salem Wire Nail Company, W. H. Foster.  
New Castle Wire Nail Company, J. E. Patterson, secretary.  
Indiana Wire Fence Company, O. M. Gregg.  
E. Bement & Sons, A. O. Bement, G. W. Bement, C. E. Bement.  
Carlisle Chain Works, Supt. Truitt.  
Grafton Stone Company, W. S. Miller.  
Findlay Rolling Company, H. W. Briggs, president.  
B. F. Avery & Sons, E. E. Paine, C. F. Huhlein.  
Consolidated Wire Company, E. M. Burton.  
Southern Agricultural Works, W. E. Austin.

The following concerns were represented by O. C. Mead: Millers Falls Company, Cleveland Twist Drill Company, T. Rowland's Sons, Germantown Tool Works, H. B. Black & Co., Kean & Doty Mfg. Company, and the following by H. W. Forde: Wyoming Shovel Works, Diamond State Iron Company, McKinney Mfg. Company, Crescent File & Tool Company. Both of these gentlemen were active as members of the Reception Committee in introducing members and promoting acquaintance.

### Representative Jobbers.

The interest taken in the gathering was evidenced by the number of representative jobbers who were present, though not actively connected with the association. This was owing to the fact that many of the questions discussed are those to which the wholesale houses are now and have for some time past been giving a good deal of attention. Among these gentlemen were W. W. Supplee of the Supplee Hardware Company, Philadelphia; Major-General B. F. Eshleman of Stauffer, Eshleman & Co., New Orleans; Albert Baldwin, Jr., of A. Baldwin & Co., New Orleans; Henry Keidel of Henry Keidel & Co., Baltimore; George Deming of the George Worthington Company, Cleveland, and James H. Ritter of the Biddle Hardware Company, Philadelphia.

### Short Addresses.

One of the pleasant features of the convention was the presence of many prominent manufacturers who manifested a desire to co-operate as far as practicable in the plans of the association. Some of the best known and largest manufacturing concerns were represented by their principals and executive officers, some of whom occupied places of honor beside the presiding officers. A number of these gentlemen responded briefly to an invitation to address the convention, making appropriate and forcible remarks, which were enthusiastically received by the delegates. The disposition manifested was regarded as auguring well for the accomplishment of the purposes for which the assembly was called. Among those who thus addressed the convention were Charles Landers of Landers, Frary & Clark, W. W. Supplee of the Supplee Hardware Company, Samuel Disston of Henry Disston & Sons, William G. Smythe of Russell & Erwin Mfg. Company, Ex-Mayor L. H. Pease of the Stanley Works, Charles L. Mead of the Stanley Rule & Level Company, Charles H. Parsons of P. & F. Corbin, W. T. Norton of the American Axe & Tool Company, Arthur Brittan of Brittan, Graham & Mathes, James P. Kelly of Kelly Axe Mfg. Company, J. H. McKibben of the Peters Cartridge Co. and R. R. Williams of *The Iron Age*.

### Committees to Confer with Manufacturers.

One of the matters to which the association gave careful attention was the consideration of measures to be adopted so as to secure a more satisfactory condition of things in regard to the prices on certain lines of goods, many of which have for some time been sold as leaders, while others for special reasons have been handled at very narrow margins of profit. Committees relating to these lines had been appointed previous to the meeting and a good deal of careful work had been done by them. It was found, however, desirable to reorganize some of these committees, which at the session on Tuesday afternoon were constituted as follows:

*Turning Plows.*—J. J. Mandlebaum, chairman; Messrs. Eshleman, Richardson, Dudley, Barker, Lipscomb and Wm. S. Donnan.

*Steel Shapes.*—Frederick Orgill, chairman; Messrs. E. W. Deveney, Watkins, King, Kirkpatrick, Haynes. *Barb and Smooth Wire.*—Charles H. Ireland, chairman; Messrs. John S. Brown, Haynes, Buford, Beasley, John H. Donnan.

*Shovels and Spades.*—W. G. Simmons, chairman; Messrs. King, Clarke.

*Strap and T Hinges, Axes and Hatchets.*—W. A. Chenoweth, chairman; Messrs. J. C. Luttrell, Robertson, McClung, Beck and Lipscomb.

*Chains and Hames.*—Lee Richardson, chairman; Martin, Randolph, Watkins, Clark.

*Planters' Eye Hoes.*—John S. Clarke, chairman; Messrs. Keith, Gibbins, Barnett, Giles.

*Handled Hoes.*—W. E. Gibbins, chairman; Messrs. Clarke, Keith, Barnett, Giles.

*Ammunition.*—W. S. Bransford, chairman; Charles H. Watkins, P. M. Brown, H. A. Palmer, Jenkins.

*Saws.*—Frank S. Gray, chairman; Robert G. Meade, Smith Tennison, W. H. Kettig, H. H. Beers.

The reports of the above committees were an important feature of the meeting, and while the way was not clear to make arrangements in all cases that entirely met the views of the jobbing houses, a good deal was accomplished in this direction, and arrangements were made by which several lines of goods will be put in a more satisfactory condition than has prevailed. Among those which received the most attention were Planters' Eye Hoes, Turning Plows, Steel Shapes, Chains and Hames, Handled Hoes and Ammunition, while the status of Shovels and Spades, Strap and T Hinges, Wrought Butts, Saws, Axes and Hatchets was also discussed with more or less definite recommendations.

### Co-operation between Manufacturers and Jobbers.

During the convention reference was more than once made to the fact that heretofore the jobbers have not infrequently exercised their ingenuity to circumvent or break down the combinations formed by manufacturers, and the opinion seemed to prevail that in nearly all cases this can sooner or later be done. A disposition was, however, manifested on the part of the jobbers represented in the convention to unite with manufacturers in maintaining prices, provided the jobbers' interests were duly regarded. It was conceded that the efforts which the trade have for years been making to get the better of combinations, in which they have been almost uniformly successful, had resulted disastrously to all concerned. The opinion was expressed by many that if the manufacturers and jobbers could work together in harmony a fair and satisfactory profit could be secured by all interested and without detriment to any class.

### Trip Down the James.

Archibald Anderson, president of the Tredegar Company, who in addition to their general foundry work are large manufacturers of Horseshoes, tendered the visitors a trip down the historic James River. Early Wednesday evening the company, largely composed of ladies, assembled on the steamer "Ariel." Those familiar with the locality pointed out the points of interest until Dutch Gap was reached, when the return trip was begun. On the way down an interesting feature to many was the large number of monitors, now out of date, anchored in the river, there being less damage to hulls there than in salt water. There was an abundance of good music, both vocal and instrumental, the latter supplied by a large auto.



matic orchestration, which was a part of the boat's equipment. Solo and quartet singing was accompanied by a piano and altogether a most enjoyable time was had, notwithstanding the forbidding weather. Captain F. W. Cunningham of the State military and others entertained the company down and back with well selected vocal music. One of the pleasing features of the occasion was a bountiful lunch.

#### Attendance of Ladies.

The presence of ladies at the convention was a new feature, this being the first time that they have attended the annual meeting of the association. The suggestion of President Langstaff that members bring their wives and daughters with them was acted upon by quite a large number, so that the attendance of ladies at the convention was one of its most conspicuous and pleasant features. It may be said that many of the members regretted journeying to Richmond without some of the ladies of their families when they found that so many others were accompanied by them. Among the ladies present were Mrs. and Miss Disston, Mrs. Henry Keidel, Mrs. Rockwell, Mrs. R. R. Williams, Mrs. Kettig, Mrs. Jenkins, Mrs. Greenwood, Mrs. Austin, Mrs. James J. Mandelbaum, Miss Langstaff, Miss Gibbins, Mrs. Thacker and Mrs. Thomas E. Oliver of New York, who visited Richmond on her wedding tour.

#### Election of Officers.

At the closing session of the convention officers were chosen for the ensuing year with the following result:

- A. D. Langstaff, president.
- W. A. Chenoweth, first vice-president.
- W. A. Gregg, second vice-president.
- W. P. Smith, secretary.
- O. B. Barker, treasurer.

In addition to these, who are *ex-officio* members, the following gentlemen were chosen as members of the Executive Committee:

- J. J. Mandelbaum, Arkansas.
- F. G. Yerkes, Florida.
- C. F. Huhlein, Kentucky.
- Jenkins, Maryland.
- Lee Richardson, Mississippi.
- Chas. H. Ireland, North Carolina.
- J. J. Wescoat, South Carolina.
- George Hardwicke, Texas.

#### Next Meeting.

After some discussion, Birmingham, Ala., was chosen as the place for next year's convention. The principal contestants for the privilege of entertaining the association were Birmingham and Knoxville, Tenn., although other cities were represented. An invitation was also extended on behalf of Louisville, which was seconded by prominent jobbing houses in that city.

#### Banquet.

A fitting termination to the arduous labors, not only of the three days' session, but the months of preparation in which officials and delegates had alike participated was the banquet, at which Charles H. Watkins, the efficient chairman of the Local Committee, presided. It was given in the dining room of the

Ballard Hotel, Thursday evening, June 7. Covers were laid for about 165, of whom many were ladies. The tables extended along three sides of the large room. Gentlemen escorting ladies were admitted first and given the choice seats facing the center of the room, the guest table being at the head. The Mayor of Richmond, J. Taylor Ellyson, in extending "Virginia's Welcome to Our Guests," dwelt especially on the presence of the ladies, who were there in large numbers. Indeed, the secretary, W. P. Smith, in responding to the Mayor's address, as well as other speakers, alluded to the pleasure of having the ladies present. One of the guests, speaking for those who were, like himself, accompanied by ladies, banteringly challenged the members to bring their wives, daughters and sweethearts to the next feast, a year hence. The Hon. George L. Christian, president of the Chamber of Commerce, extended Richmond's welcome in a happy speech that bristled with witty points, culminating in proving that Gen. Robert E. Lee, once in his career, was taken for a Hardwareman. Mayor Ellyson of Richmond also welcomed the delegates in a graceful and appropriate address.

R. R. Williams, in speaking of the Hardware Club of New York, extended a cordial invitation to the members of the Southern Hardware Jobbers' Association and all present to visit the club rooms when in New York, and in this connection he read the following dispatch:

If members of the Southern Hardware Jobbers' Association, when visiting New York, will send their addresses to J. L. Varick, secretary, or to any of the Board of Governors, the privileges of the Hardware Club will be extended to them in accordance with our rules. Please communicate this invitation at this evening's banquet.

WM. H. WILLIAMS, Prest.

Owing to the lateness of the hour, a number of gentlemen who had been assigned toasts did not speak. Among these were W. W. Supplee, James H. Ritter of the Biddle Hardware Company, James L. Whittier and Irby Bennett.

A remark by S. H. Hawes, vice-president of the Chamber of Commerce, is significant of the good feeling engendered by the meeting, that if a few such conventions had been held in the South previous to the late war there would have been no war.

#### Friday's Excursions.

The Richmond & Danville Railroad Company generously entertained the delegates and their guests on Friday, after the convention had finished its work. Nearly 200 people, including a large number of ladies, met at the railroad depot at 9 o'clock Friday morning and enjoyed thoroughly the 35 miles' ride down the peninsula, the scene of so many stirring events. When West Point was reached the company embarked on the fine steamer "Baltimore" of the Bay Line and steamed down the York River to be-

low Yorktown, viewing the battle fields of two wars. The scene of Cornwallis' capitulation, now marked by a large monument erected by the Government within a few years, together with the old Nelson mansion, were especial objects of interest. The lunch provided by the entertainers was excellent and capitally served. During the return trip vocal and instrumental music of an informal character was participated in by the company in a most enjoyable way, besides having several solos and duets by Mr. Wood and Mr. Greenwood, manager of the Horseshoe department of the Tredegar Company. The weather was exceptionally fine, while the success of the affair is largely accounted for by the presence of a number of Richmond & Danville Railroad officials, among whom were J. M. Culp, assistant traffic manager; J. H. Drake, general freight agent; W. A. Turk, general passenger agent; J. S. B. Thompson, superintendent; E. T. Lamb, forwarding agent, and Chas. W. Harwood, freight agent. Just before the boat reached West Point, Mr. Clarke of the Old Dominion Iron & Nail Works Company invited the company to remain on the cars on arriving at Richmond, when the train would take them over to Belle Isle for an inspection of their works. The invitation was accepted by many.

#### Reports of Committees.

The different papers which were presented by the chairmen and members of committees made it evident that careful and painstaking work had been done before the assembling of the convention, and much favorable comment was made on the thoughtfulness and ability of many of the papers, and the thoroughness with which the different subjects were discussed. Many of the topics considered are of interest not only to the immediate association for which the papers were prepared, but also to the trade at large, touching as they do upon many practical questions of recognized importance. In these times, when merchants find it necessary to give most careful attention to their business methods and are on the lookout for any improvements which may be adopted, these discussions are of especial value. The attention with which the proceedings were followed by representative Hardwaremen from other parts of the country indicates the interest with which the trade at large regard such deliberations. In order to give our readers the benefit of these discussions and to enable them to see things in the light in which they were presented at the convention at Richmond, we give in the following columns many of these papers in full and commend their careful perusal to Hardware merchants everywhere. While they relate primarily to the wholesale trade, by whom they will doubtless be carefully studied, they contain much which will be of service to the enterprising retail merchant.

## Payment of Salaries to Traveling Salesmen.

The following paper on this subject is the report of John S. Brown, Knoxville, Tenn., chairman of the committee to consider the subject, which was one of recognized importance and evident interest, as it received considerable attention at several sessions. The suggestions and information given by George Deming of George Worthington Company, Cleveland, Ohio, president of the Hardware association of that city, were of recognized value, Mr. Deming being present as the guest of the Southern Hardware Jobbers' Association. Mr. Brown's paper is as follows:

### Payment of Salaries to Traveling Salesmen.

BY JNO. S. BROWN.

Ten years ago Jobbing Hardware in the Southern States was a profit earning business, possibly more so than any other; certainly in this respect no other excelled it. Since that time it has gradually departed from that condition until now it is universally acknowledged that the compensation derived from conducting it is extremely small. Yet, it is a trade that takes years to learn, requires talent of high order to conduct, and large capital, and these conditions should justify good returns to the owners.

For such a great and deplorable change to have taken place in a trade dealing in articles of absolute necessity, not only for the comfort of the human race, but actually for the sustenance of its life, there must be deep seated and radical wrong forces at work. It is conceded, to begin with, that a part of the change is due to the gradual and ceaseless fall in prices, which has added to the fixed charges of doing the necessary work incident to the business. But this is one of the smaller causes. A second cause is the inordinate desire on the part of many jobbers to do a larger business than the natural conditions surrounding them justify, and a straining after an increased volume of business through methods not in accordance with sound mercantile principles. These efforts have resulted sometimes in the purchase of excessive quantities, which it has been necessary to unload at reduced prices, and without profit, thus establishing a standard for others who had pursued a more prudent course, and sometimes in reaching out into territory which, by all natural and physical laws, belongs to other centers, and seeking to obtain business there regardless of cost or profit. This cause of disaster is an ambition deeply ground in human nature and it cannot be thoroughly eradicated, but it can be controlled and its evil lessened if a proper system is followed for obtaining an acknowledgment of the results, and such keeping of accounts as will show to each one exactly whence and from what his profits and losses are derived. But the great agency in producing the present profitless state is the traveling salesman, and the ill conceived method of compensating him for his services. Conceding that the business at present is not remunerative, the question is asked if it is possible to restore it to its former position. I have no hesitation in saying I think it can.

Our local associations and this one have already laid the foundation upon which it is possible for us to build; they have cultivated between us a feeling of friendly respect, which permits of an interchange of views and ideas and makes it possible for us to meet together in a spirit of concession. This is a long step forward, and without such a condition we could do nothing to relieve our distress.

To start with, I wish to say that I do not believe that it is possible to effect any permanent results by compacts

with each other as to prices, except between local associations, nor by any system of rebates or agreements with the manufacturers. These as temporary expedients are useful, but their usefulness is limited by the numberless difficulties in enforcing them. These plans have been tried time and time again, and I would think to the full satisfaction of all as to their futility. I remember that one of the largest manufacturing corporations in this country (making a line of goods that we all handle) some years ago established a system of rebates which allowed the jobber a modest profit. The conditions of that rebate were hedged around with every safeguard, and yet, it is a matter of personal experience with us all that the conditions imposed were constantly violated, and it is a record of this association that the firm stated to our secretary in a letter, that they believed that fully one-third of all the houses signing the agreement violated their contract and were guilty of misrepresentations in order to obtain the rebate, and in the end they were compelled to withdraw the plan.

We all know of the failure of the old rebate plan of the cartridge association, and if you will ask a few of your neighbors, in other lines of business, who have had the same troubles to deal with, you will find that the results have been no more satisfactory with them than with us. We must have a plan which is free from these defects.

The traveling salesman is an absolute necessity to the jobber. Many jobbers have tried to do without him, only to find that they were no longer jobbers; and yet, in spite of the necessity of his employment, he is the most troublesome and costly adjunct to a house. He is an agent, placed where it is impossible to follow his actions closely, and so situated that cast iron rules cannot be made for his guidance nor undeviating prices be fixed for him. He must be allowed to act largely upon his own judgment. He ought to be of the very greatest value to a house; he is in a position where, if properly controlled, he would be so unquestionably. But at present I have no hesitation in claiming that he is the first and prime cause of the present unsatisfactory state of the jobbing Hardware business in the South.

A short time ago, in a conversation between several jobbers, one of the largest remarked that his traveling salesman were his greatest enemies, that they were continually misleading him by false information, by demands for lower prices to meet imaginary competition, and never gave any information that enabled him to get an increased profit. This remark, unfortunately, is as true to us all as to him.

Some time since I had the good fortune to see a letter from one of the largest Hardware jobbers in this country. This merchant, a man of unquestioned broadness of views, liberality and ability, stated that his traveling salesman constantly endeavored to thwart his plans, that it was a perpetual fight with him to get them to carry out his aims. His experience is the experience of us all. These are hard truths, but they are stated in no spirit of unfriendliness to the traveler in particular or in general. It is impossible that such universal ill results

should be laid at the doors of our agents themselves. Most of them are men of honor, ability and education, many of the best merchants in this land were formerly traveling salesmen, and the fault is not in the man, but in the method of employing him alone.

The chairman of this committee takes a decided stand against the payment of salaries to travelers based, as it is at present, upon sales alone. This is the almost universal custom in vogue, and it is not only wrong in theory, but it is worse in practice. It is a method which puts a premium upon price cutting, and, as a rule, rewards most the man who least deserves it. It is not justified by any good reason; it influences the traveler to regard the interest of the customer rather than of his own house; it leads to many petty and unjust charges for services never performed and concessions to buyers which never should be allowed, and presents no guard whatever against misrepresentations. It leads to the constant demand for lower prices and for longer terms, abuses we are trying hard to get rid of. We must have a plan which differs from this; we must recognize human nature and offer a reward for effort, but we must direct that effort to the desired result. We must recognize the selfishness of man, but make him exercise his selfishness for our benefit. We must allow his ambition free play. We must reward him for his success, but his success must be ours also. The result we desire can be accomplished, I think, by the plan which I presented to you at a former meeting, and for which I hope the time is now ripe for adoption. I think that every salesman traveling on the road should be given for his compensation a proportion of the net profits derived above the cost of the goods, and I believe that the adoption of such a plan will lead to more satisfactory results than anything this convention can do.

For years my house has kept a systematic account of all work done by its travelers. This includes salaries and expenses separate, sales and the cost of the goods sold, and also the bad debts contracted in the work. The mere keeping of these accounts led to an improvement in profits, and when we discontinued the payment of salaries and based the entire compensation upon a part of the profits, the increase was marvelous, the net results to the house being fully double. It was formerly always the case that the salesman in the house, selling only to the wholesale trade, obtained considerably more profit than that derived by the travelers on the road, but since this plan has been adopted that difference has disappeared, but there has been a large increase in the profits of the salesmen on the road, and profits of the house salesman are now only a fraction larger than those of the traveler. It must be remembered that the traveler always sells at a maximum of expenses and, generally, at a minimum of profit.

So far we have discovered absolutely no drawbacks to the system; in every respect it has been an improvement on the old one. It teaches the salesman that his compensation depends upon his exertions; it keeps the hope of reward constantly in his mind; he soon learns that whatever he does for the house he does for himself; and that if he is wasteful of time or of money it is his own loss. It makes him work for a profit rather than for sales; it makes him careful of meeting quotations made by other houses; he examines more into the conditions of quotations he is asked to meet than formerly and the dates when they were made; and he is very much more observing of the quality of goods. They now receive their information of advances as quickly as they receive their notices

of declines; they are more anxious to keep their customers on good terms with the house as well as with themselves. It develops them and teaches them self-reliance, and to study good business methods and to become better business men. I do not believe that such results follow with the old system, men of unusual ability excepted. They collect better, because they know if an account is due and unpaid the order will be declined and their work and pay will be lost. It makes them obtain fuller information as to new customers for the same reason; it keeps them closely at work and leads to fewer visits to the city, for which we formerly paid; it makes them extremely anxious to have fuller information of the goods which they have to offer, and causes them to give us information about profitable goods which are sold by other houses; it stops the unfounded complaints that we ask too much for our goods; it eliminates the troubles caused by imaginary low prices from other houses. As a matter of fact, we do not now receive one complaint of low prices made by our competitors where we formerly received 20. It is not possible for such results as these to follow under the payment of salaries, for that plan takes away the incentives which this system furnishes. It takes full cognizance of human nature, encourages ambition and sets a reward upon the right kind of success, and the reasonable hope of reward is absolutely necessary to induce human effort, and a reward dependent upon constant exertion is the more fruitful.

It is not claimed that this plan will make a competent man of an incompetent man, but it will develop a competent man, and it will show the defects of an incompetent man quicker than any other. It, also, has another advantage, it prevents unreasonable requests for advances in salaries be-

cause of offers from competitors. It puts the manager in position to see at a glance exactly what he is doing and he knows always to a cent exactly what he can afford to do. It obviates the necessity of fixing a man's salary in advance. Every merchant knows the trouble under the old plan of fixing salaries, that where a man had an unusually good year it was impossible to refuse to advance his salary, regardless of what the indications were for the coming year, frequently with disastrous results. For instance, the salaries for 1893 were based upon results of the business for 1892, and we all know how extremely unjust and unfair this was to the merchant.

The percentage which should be paid to a man is a matter of individual judgment and of local conditions, and this should be governed largely by the territory traveled and by the prices obtained. If the sales are large and the prices satisfactory, the percentage can be made small. If the conditions are harder it can be increased up to the limit of safety. But it may be put down as a fixed rule that any traveler who costs his employer as much as 50 per cent. of the difference between the cost and the selling price is an unprofitable man.

If the plan is generally adopted I am confident of the good results that will follow, for it is not only beneficial to the traveler, but also to the merchant himself. It gives him an insight into the advantages and disadvantages of travelers that nothing else will. He soon finds out what travelers pay him and what territory he can afford to work and what he had best let alone, and I am quite sure that the jobber who tries it for a year would not think of again paying salaries, and that the final result will be a large increase in profit and more satisfactory financial results to the trade.

followed it would make this country one of the happiest on earth."

It is very gratifying to note at this time that business men have within recent years come to study this question more than ever before, and one or two books and numerous articles in the trade papers have lately been written by experienced credit men which contain many sensible and practical hints. We also have special journals devoted to the subject, and in nearly every city merchants' law clubs are being formed where lectures are given on commercial laws by prominent attorneys, so that with these advantages before us we, as business and credit men, should bring the application of credits down to a science, and every year should see fewer losses on our books if we act wisely upon all the information gathered from these sources.

In as short a paper as this must necessarily be it is impossible to cover the entire length and breadth of this subject, so we can but touch upon some of the more vital points in giving credits and what a credit man should be.

Webster says: "Commercially speaking, credit is trust given or received—expectation of payment for property transferred or fulfillment of promises given—a mercantile reputation entitling one to be trusted." So, in the first place, it is necessary to determine if our proposed customer is entitled to credit, and before we can make a favorable reply we should know that his habits, character, experience and ability to manage, as well as his financial responsibility, are first class. In too many instances I think that the last named requisite being found satisfactory, the other important elements have not been looked into and it has been found out, too late, that they were missing. A man without integrity of character and plenty of capital may pay well while his business pays a profit, but if it shows losses to such an extent that he decides to abandon it, he will probably transfer his property immediately to his wife or by some other means do what he can to defraud his creditors and save himself. Scoundrels often get credit from some quarter, showing that credit men have been lax in looking into the character of their customer. Perhaps we have all had experience along this line. Conservatism, ability to manage and perfect knowledge of his business should also be required in those whom we trust, for the inexperienced and the overreaching are always liable to spread out too fast and to do many other things which do not "pan out," thereby causing loss to themselves and jeopardizing the interests of their creditors. As one writer has said, "trying to bore a 2-inch hole with a gimlet is not a successful undertaking usually" and I think it shows plainly that such houses are either reckless or else have not a sufficient knowledge of their business and in either case they are not entitled to credit.

Briefly, then, we should analyze carefully the reports received through any source on houses applying for credit, bearing in mind that our safety as creditors must be based on the "qualities of mind and heart, the mental, moral and financial status and the surroundings and relationship of the applicant." It is also well, I believe, to consider as far as we can of the same, the prospects of his business and what these prospects are based upon, either crops, lumber or the product of mines, or whatever it may be. We should keep posted, as far as possible, ourselves as to the condition of market and the tendency of prices, and in this way we will not be dependent upon simply what our customer tells us. Those of us who had the pleasure of attending our last annual meeting

## Credits and Their Application.

N. A. Gladding, manager of E. C. Atkins & Co., Memphis, Tenn., was the chairman of the committee to whom was assigned the discussion of the question as to credits and their application. His report, which was favorably received by the convention, is given below in full. The same subject was carefully discussed in the able paper of R. M. Dudley of Nashville, Tenn.

### Credits.

BY N. A. GLADDING.

The subject of "Credits and their Application," which is now engaging the serious attention of business men and commercial bodies everywhere, is, however, not a new one, for from time immemorial the business man has no doubt been troubled by the question, "Whom shall I trust?"

We can in fancy look over the ages past to the time when Cain tilled the soil and Abel herded his flocks and feel quite sure that even then there were those who were ready to buy a farm or a flock of sheep "on time," and as we read further along in the world's history we learn that the Israelites bought and sold on credit, mortgaged their vineyards, &c., and to so great an extent that the Mosaic law established a statute of limitation in the Jubilee year, when all debts were erased from the books and every one started anew.

In these days we have the statutes, but in most cases the debtor puts on his own limitation of time by starting anew in his wife's name, or as agent, or perhaps incorporates.

To say that the question of credits has perplexed humanity since olden times is but stating it mildly. It is said that in China 2800 years before Christ banks of deposit and discount existed, and 800 years B. C. interest

laws were enacted for the protection of borrowers, and all along down the ages the credit system has been slowly developing in all countries having any degree whatever of civilization. In the palmy days of ancient Greece and Rome a regular code of laws existed bearing upon this subject and on account of the power given the creditor over the delinquent debtor, they were the cause of many riots and much slavery and imprisonment, and it is a well-known fact that even during the present century many persons have suffered from imprisonment and other punishment in European countries and in some States of our own land, all because of credit being too cheap. The great Psalmist must have had in mind the debtor who caused so much trouble in these days and whose progeny still walks the face of the earth, when he said that "The wicked borroweth and payeth not again." We can all, no doubt, vouch for the truism spoken by Franklin, that "Creditors have better memories than debtors."

The great Thomas Jefferson, in a letter written to a merchant of Richmond in July, 1787, spoke of "the curse of credit to his countrymen, and said that he believed in a free course of justice as being the only remedy against indolence and extravagance and infidelity to engagements. He believed in the maxim of buying nothing without money in one's pocket with which to pay for it, and that if this plan was

in Atlanta doubtless remember the anecdote told of the man who called on one of the Hardware merchants there to purchase a stock of Hardware, and who, after selecting the same and about to leave the store, was politely asked as to his basis for credit, and in reply to the various questions put, much to the merchant's surprise, stated that he had neither money, lands nor other valuable property, nor could he give security, but that he was quite anxious to go into the business, and was sure that if he failed he would not lose anything. Whether true or not, this story represents a class of people who are abroad in the land and ready to venture in every department of trade if they can only find the house who will let them have the goods. As the quack says, "No cure no pay," so they say, "No success no pay," after they have your goods.

One of the most difficult cases the credit man has to contend with is the customer who, coming well recommended and sufficiently rated, pays promptly for a time and then, becoming insolvent, staves off the fateful day as long as possible by rank deceit. He promises a certain settlement and when accepted changes the proposition, which is again received in good faith, when another is made, and he continues this plan of action until he sees the end of the rope is at hand.

The creditor has had confidence in this man's integrity, believes and trusts that the results will prove all right and does not want to sue, and thereby brings ruin to his business. But finally he is awakened to the fact that he has been befriending the wrong man and that it is too late to realize much, if anything, from the wreck. It was a case of lack of nerve to put this friendly customer on the rack at once and thereby save ourselves, and is an illustration of the fact that we should investigate carefully the condition of all regular customers at least once a year, and oftener if any doubt arises. We should also be very wary of the man who displays his rolls of bills with considerable dash and who buys freely and pays cash for the first few times and who then wants to buy a bill on 30 or 60 days' time. He explains that the investment that he is making is costing him a little more than he anticipated, or that freights have been excessive, but that his prospects for business are very fine and that just as soon as he gets started up in good shape he will have plenty of money again. The facts are that in 99 cases out of 100 this man who started in with such a flourish of trumpets is going into a business that he knows very little of and is a poor manager. He has run to the end of his purse strings and is now perfectly willing to take risks with your capital. Our goods represent our capital and we cannot afford to be careless at any time or under any circumstances in allowing that capital to go into unsafe hands.

We must admit, however, that credit is a necessary adjunct of commerce and trade, and without it progress would be slow. "The laws underlying the system of credits are as wide as the civilized world," and for this reason should we make the science of the application of same more and more of a study. But it is a well known fact that credit has been altogether too cheap for many years past, especially in the United States, which, to my mind, shows plainly that proper care and study has not been given to the question. Furthermore, competition and the fear of losing a customer and our neighbor getting his trade, has no doubt caused many a bill of goods to be sold to parties who had no real basis for credit.

The credit man should be fully acquainted with the laws bearing on col-

lections, assignments, corporations and all other points which arise in connection with the selling of goods in every State in which his house does business, so that he may know how to act in all cases of trouble. He should also be a man of good judgment, keen perception, firm in his convictions and of prompt action, with sufficient tact to draw the truth from men and at the same time not afraid to ask direct questions. These qualities, coupled with amiability of character and equanimity of temper, it seems to me, should make a perfect credit man, and yet such a man as this is but human and liable to err.

It is frequently the case in this country that we are obliged to accept compromises in settlement of our claims against debtors, but it is quite interesting to note that in English law a partial payment takes the debt out of the statute of limitations, and that a payment of a smaller sum than the total amount of the claim, even though accepted by the creditor in full satisfaction, is no defense to a subsequent action for the debt. The reason for this rule seems to be that there is no consideration for the creditor foregoing his right to full payment, and it is necessary, under their law, that the payment of a smaller sum to satisfy the debt must be made by a person other than the one originally liable or at an earlier date, or at another place or in another manner than the date, place or manner contracted for. I believe it is especially necessary to keep up with the laws affecting corporations, as State legislatures are almost constantly changing them. For instance, the legislature of Arkansas recently passed a law making it impossible for an incorporated company in that State to make a preferred creditor.

The discussion of this important subject at a convention of business men, such as this, cannot help but be productive of great good, especially if it results in the adoption of some plans whereby we can systematize the matter of securing reports and the giving of credits. Of course it is impossible that any one rule can be absolutely adhered to at all times and yet we can, no doubt, with but very few exceptions, apply the system that we conclude to be the best. The reports received from commercial agencies are often biased, and while they are probably the best source of information, as a rule, that we have at the present time, yet the service is far from satisfactory and could be materially improved. The men sent out by the agencies to interview the trade are often young and inexperienced in business, working on small salaries, with little or no judgment of men or affairs, and yet it is upon reports from such as these that men are often rated and upon which we must base our credit. If all jealousy among rival houses can be eliminated, so that replies can be given in a spirit of fairness, it would, in my opinion, be wise to adopt a system of inquiry blanks to be used among the members of this association, especially those located in the same cities or selling into the same territory. If Mr. A. B. of Jonestown, with a good rating in *Dun or Bradstreet*, wishes to buy of me, having never traded with me before, and I find upon inquiry of my neighbor that he owes him a past due account, it is quite conclusive that he is running behind and afraid to increase his line where well known; consequently the chances are that by receiving this information and refusing to ship except for cash I am saved a loss. It is not long before my neighbor receives equally valuable advice through me regarding some other party, and thus the plan is mutually advantageous, and we can thus aid in

stopping the spirit of overtrading and in many cases of actual rascality, which has been so frequent in the past. Since taking this subject up I have learned that something similar to this plan is already in vogue in one or more of our Southern cities, and I believe that the more generally it is used the better it will be for the trade. The old adage, "An ounce of prevention is worth a pound of cure," is as applicable to the giving of credits as to the science of medics, and if by our deliberations we can devise ways and means of dosing out more of the preventive and thereby save ourselves so much labor in trying to cure the patients after they are very sick, and sometimes dead, I am sure we shall have accomplished a great deal. We are not like the poet who sings, "It is better to have loved and lost than never to have loved at all," but on the other hand we think it is better never to have sold at all than to have sold and lost.

It will no doubt be many weary years before business is brought down to an absolute cash basis, yet may we not all work and pray for that Utopian age to arrive, and if possible during our day and generation, when men everywhere will at least try to follow the Pauline injunction to "Owe no man anything."

In conclusion, I will beg your further indulgence for a moment while I read the parody on Hamlet's soliloquy, copied from Mr. Earling's book on "Whom to Trust?":

To sell or not to sell?  
That is the question  
Whether it is better to send the goods  
And take the risk of doubtful payment,  
Or to make sure of what is in possession,  
And, by declining, hold them.  
To sell; to ship; perchance to lose—  
Aye, there's the rub!  
For when the goods are gone  
What charm can win them back  
From slippery debtors?  
Will bills be paid when due?  
Or will the time stretch out till the crack of doom?  
What of assignments, what of relatives,  
What of uncles, aunts and mother-in-law,  
With claims for borrowed money?  
What of exemptions, bills of sale, and the compromise  
That coolly offers a shilling a pound,  
And of lawyers' fees  
That eat up even this poor pittance?  
Yet sell we must;  
We seek the just;  
For wealth we lust;  
By some we are cussed;  
And stocks will rust;  
But we skip the wust;  
Or we'd surely bust.

### Credits.

BY R. M. DUDLEY.

I am allotted little less than a limitless theme, and, in comparison to its possibilities, will touch it briefly.

Webster tells us the primary meaning of credit is reliance on the truth of something said or done: Faith; trust; confidence. In its commercial sense it signifies trust, given or received; expectation of future payment for property transferred; mercantile reputation, entitling one to be trusted. Applied to individuals, firms, corporations, communities or nations.

Reliance on things said and done created confidence and faith. From this union came credit and trust. Confidence became the tutor of credit, and taught that character is to reputation what fulfillment is to promise. Faith was the fostering friend of trust, from whom the latter learned that character was credit's legal tender.

In this connection, at least, my understanding of the meaning of credit is that attribute that impels—that quality that enables man, individually or collectively, to carve an honorable character out of his real surroundings.



The same line of reasoning leads me to define trust as capital's righteous and ready recognition of legitimate credit.

I say this recognition must be righteous, for trust, to create a cause to expect and earn the right to receive, must first give full and equal value.

What the conscientious fulfillment of the relative obligations of credit and trust has accomplished is patent to us all.

That by no other means can individuals, firms, corporations, communities or nations so readily reach and rightfully retain commercial supremacy, is equally evident.

Perhaps some would suggest an exclusively cash basis. Existing conditions prevent such a method. Present tendencies discourage such a hope.

Credit of the character aforesaid formed the foundation, and trust of the kind just defined furnished most of the material, for our commercial fabric; and these two factors are as essential to its continuance as they are inseparable from its formation.

Up to the present point I have made it appear that credit and trust have co-ordinate but distinctive spheres of action; but at times their functions become so suddenly and minutely interwoven that they appear to have swapped places, as in the case of labor trusting capital with its muscle or its skill; but in reality it is the credit of the individual or the institution that controls the capital that leads labor to trust them with its services, for without credit the owners of capital must pay labor in advance.

How often would capital comply?

I have said that I see no hope of the coming of a cash basis. Still, I am told there is as much money *per capita* in this country to-day as there ever was.

I think there is more money in this country now than there ever was; and I am sure there ought to be if there isn't. I know there is less money to-day in the hands of the masses than there has been for years. I believe there are millions and millions of people in this country who have not a hundred dollars, and I know there are a hundred people in this country who have millions and millions of dollars. We divide the whole number of people into the aggregate number of dollars, and proclaim the result with as much self approval and far more happiness than if we divided the aggregate amount of money among the whole number of people. For the mathematical accuracy and lovely liberality of this calculation has been demonstrated by the same philanthropic and unerring authority that taught us tariff is not a tax.

I mention these facts merely to show why I think the business of this generation at least will not reach a cash basis; and that we will continue to do the larger part of our business on credit.

Last summer's panic gave us some idea of the exclusively cash system that comes from the cessation of trust and credit.

I admit, however, that it was not entirely a fair sample; for Abel laid aside his meekness and went out of the way to welcome the attack of Cain.

Having expressed, gratuitously, my ideas of the real meaning and the proper functions of credit and trust, I shall try to confine what follows to their present condition and practical operation.

I feel safe in the assertion that each and every jobber stands in the double capacity of Dr. and Cr.—that is, we all trust and are trusted. We all credit and are credited.

If our credit is founded on character, the manufacturer is quick to ascertain

the fact and is ready to trust us—even seeks our custom. If his trust is conscientious, reciprocal benefits ensue, and we become his regular customers.

If our credit prefers reputation to character, trust, even the most conscientious, comes upon probation. Timidity gives place to uneasiness; uneasiness finds foundation, conflict follows, and mutual loss results.

This is a general rule, and holds between us and our customers as much as it does between us and the manufacturers.

The higher the order of the credit that asks, the more intelligent and therefore conscientious the character of the trust that extends—the more frequent, the more agreeable and profitable are the transactions.

The most tangible and undeniable proof of the above statement is found in the fact that the Chemical National Bank of New York City has paid dividends on its stock and built a surplus fund of \$6,000,000 on a capital of \$300,000.

When we purchase goods from the manufacturer or importer, quantity, quality, price, terms and conditions are carefully weighed and so clearly understood that the transaction constitutes a contract.

There is no more doubt in his mind, or ours, that we are morally and legally bound to pay his bill the day it matures, or discount it within the prescribed time, than there is in his mind, or ours, that we are entitled to the goods according to agreement.

This degree of certainty as to his collections adds to the real value of his capital invested, for it justifies him in doing a large business on a comparatively small capital.

Allow me to compare our sales with our purchases.

When we sell a bill of goods the transaction has all the elements of a contract, except as to its collection. If we send too many goods, or they are lacking in quality, who questions the purchaser's right to hold subject to our order? If the price is higher than stipulated we are in haste to correct, or in a hurry to apologize.

Why is all this true?

Because it is right. We made a contract with the man to whom we sold the goods. Equity says we must fulfill it, laws say we must, custom says we must; and most especially our brother members of this association say we shall keep our contracts with the purchasers. And our good brother has a man on the road to see that we keep our contracts.

We and our man on the road take just as much interest in our brothers' business as they do in ours.

I have said in all sincerity that it is right for us to keep our contracts. We desire and expect to keep them, for in no other way can trust adequately perform its functions.

But our part of the considerations of the contract being complete, we expect credit to comply with its part of the considerations that led to the contract.

Haven't we a moral right to receive payment at maturity? Yes. Haven't we a legal right? Yes. Is it not the custom to receive payment at maturity? No. Why? Because our customers have been educated to the contrary. Because their obligations to pay at maturity have not been invested with the solemnity of a contract. With few exceptions, the matter of payment is kept in the background, or if mentioned by the buyer, we tell him we will be as "clever" as anybody else.

The fact that our customer is placing himself under contract to pay at maturity, instead of being emphasized, is studiously avoided or concealed for fear he thinks we are not as clever as anybody else.

Frequently the obligation rests so

lightly that our customer cannot tell within two weeks of the maturity of the bill. Thus it is that our part of the contract that every purchase and sale on credit creates is explicit and fixed, while the purchaser's part of the contract is implied and indefinite, resting more upon construction than upon evidence, for we rarely state the terms on our bill. It appears to my mind that a clear and complete understanding of and an unequivocal acquiescence in the terms, conditions and stipulations constitute one of the elementary requirements of a contract; and that we are, in this respect at least, largely to blame for tardy and laborious collections.

I have expressed the conviction that we will have to continue to make the largest portion of our sales on credit, but I admit that in our efforts to increase our sales we frequently allow our eagerness to outstrip discretion. And I acknowledge the absolute necessity of closer investigation of all the elements required to constitute a desirable credit risk.

Bearing in mind that there are accidents that cannot always be prevented, that there are misfortunes that cannot be entirely prepared for, I am of the opinion that all business failures are traceable to one or more causes; that in nearly every case the causes could have been modified, and in a majority of cases these causes could have been avoided.

Experience has taught me that there is little or no protection from the reptile who systematically seeks to pilfer; but in relation to every other class of credit, I suggest the following questions for consideration,

Age and nationality?

Married, or single?

Exemption and collection laws of his State.

How much and what kind of real estate has he?

In whose name is it recorded?

Is it encumbered by lien, mortgage or judgment?

To whom?

To what extent?

Is it properly insured?

For how much?

In what company?

When expires?

How much stock (merchandise) on hand?

If it is insured, and for how much.

How much is due him by notes and accounts?

What proportion of the amount is collectable within a reasonable length of time without suit?

The nature and market value of all other personal property.

Temperate, or dissipated?

Industrious, or indolent?

Frugal, or extravagant?

Thrifty, or improvident?

In what esteem is he held by his neighbors?

Is he experienced, or a beginner?

Is his location desirable, or otherwise?

About how much custom has he?

Is it a desirable class of custom?

Is it regular, or transient?

Does he sell for cash or barter, or on credit?

Is he careful whom he credits?

Is he a good collector?

Is he educated, or illiterate?

Does he keep his books intelligently and systematically, or at random or by memory?

Does he ever try to ascertain whether he is making or losing money?

Could he tell if he were to try?

Does he try to accumulate, or is he satisfied with a mere living?

From whom does he buy dry goods?

From whom does he buy boots and shoes?

From whom does he buy clothing?

From whom does he buy groceries?



From whom does he buy drugs?  
 From whom does he buy hats?  
 From whom does he buy notions?  
 From whom does he buy tinware?  
 How much does he owe each house?  
 How much of each amount is due?  
 When will balance mature?  
 Does he pay promptly at maturity,  
 or does he have to be dunned?  
 Does he pay only in small amounts?  
 Are there any claims against him in  
 the attorney's or officer's hands for col-  
 lection?  
 Does he gamble or play in futures?  
 Does he have any borrowed money,  
 and how much? To whom?  
 When due? Where is it due? Is he  
 security for any one?  
 Whom for? How much? When  
 due?  
 Is he indorser for any one? Whom  
 for? How much? When due?  
 Is he in the habit of going security  
 or indorsing?  
 Has he ever failed? If so, what  
 caused it?  
 How much did he owe?  
 How did he settle?  
 Has he ever had a fire loss?  
 Has he a large, or small family?  
 Does he depend entirely upon the  
 profits of his business to support him-  
 self or family?  
 Is he in good health, or otherwise?  
 Does he buy freely, or is he hard to  
 sell?  
 Is his store and stock clean and at-  
 tractive, or untidy and neglected?  
 Has he enough, or too many clerks?  
 Are they attentive and obliging, or  
 are they careless?  
 Does he keep a bank account?  
 Where?  
 Do many traveling men go to see  
 him?  
 What do they say of him?  
 Is his store easy of access, or other-  
 wise?

If we had truthful answers to all of  
 the foregoing questions it is reasonable  
 to assume some would furnish favor-  
 able, some fair and some bad indica-  
 tions; and we would still have an  
 arduous and hazardous undertaking to  
 reach an equitable average.

We all know we cannot hope to get  
 correct answers to all of these ques-  
 tions. We have hardly time to ask  
 them all, but they are all connected  
 with or related to the conditions that  
 pertain to credit, and go to show how  
 difficult it is to correctly analyze and  
 properly classify customers we have  
 never seen.

The necessity for diminishing this  
 difficulty is daily growing greater.

The first step toward the removal of  
 an obstacle is an honest and combined  
 effort.

If our traveling salesman is a close  
 observer he can learn to answer him-  
 self a great many of the more impor-  
 tant questions, and if he will fix them  
 all in his mind I think he would under-  
 stand more of human nature with them  
 than without them.

I have tried to show how (compara-  
 tively) smooth and regular is the op-  
 eration of credit and trust between  
 the manufacturer and the jobber.

He knows what we expect—we know  
 what he expects. We require him to  
 keep his contracts. He requires us to  
 keep ours. I can suggest no better  
 way to elevate and improve the rela-  
 tions between us and our customers  
 than to conscientiously give them all  
 the consideration we require from the  
 manufacturer; and require from them,  
 in a courteous and friendly way, all  
 the manufacturer receives from us.

I do not recommend that we change  
 the length of time on which we sell  
 our goods, for 60 days is as short a  
 period as our customers can pay in,  
 and it is as long as we can wait on  
 them; but necessity and justice both  
 compel us to convince our customers  
 that 60 days does not mean 90 days, or

four months, and that the time of pay-  
 ment is as much a consideration of our  
 contract as is the payment itself.

I hope when my committee decides  
 upon the form of the credit blank our  
 association is to adopt, that the adop-  
 tion will be actual and earnest instead  
 of nominal and deceptive; and that  
 we will all pledge ourselves to see that  
 our salesman, let him be partner or  
 traveling man, in the house or on the  
 road, make a report on one of the  
 aforesaid blanks and said report be  
 made as full and as effectual as possible.

I am sure there is not a reputable  
 jobber in the land who would refuse  
 to furnish a statement of his resources  
 and liabilities, if the request came in  
 good faith from his banker, manu-  
 facturer or importer.

I sincerely and earnestly urge every  
 member of this association to aid in  
 the effort to convince our customers  
 of the justice, equity and necessity of  
 receiving from them the character of  
 information we so willingly yield under  
 similar circumstances.

Unless this effort to obtain state-  
 ments receives the support of actual,  
 earnest and unwavering co-operation,  
 it were better left untried, for without  
 the aforesaid character and degree of  
 co-operation the seeds of success will  
 yield a harvest of conflict and con-  
 fusion.

As requested, I submit some blank  
 forms, and a few printed rules.

Our firm has found them of some  
 service, and I beg to offer the opinion

that if our association would formu-  
 late and enforce a code of rules for the  
 regulation of our daily routine, the  
 Hardware business would be systemat-  
 ized, simplified and harmonized.

While I strongly favor rules, plead  
 for system and implore co-operation,  
 I disclaim any inclination toward nar-  
 rowness or oppression. I have en-  
 deavored to avoid and shall always  
 counsel against extreme measures.  
 Conservatism and fairness must go  
 hand in hand.

We should reject every thought that  
 smacks of the trust or suggests the  
 combine; and we should repel every  
 insinuation of such a tendency. If I  
 were called upon to express my concep-  
 tion of the motives leading the life of  
 our organization, or were I asked to  
 select its motto, I would say "Peace  
 and Good-will, and Mutual Benefit to  
 all Mankind."

In conclusion, allow me to say, I am  
 sure that even handed justice will be an  
 underlying principle, an overawing  
 power pervading all our deliberations,  
 dominating all our determinations.

Richelieu truly tells us, that "For  
 Simple Justice—every place—A Tem-  
 ple, All Seasons—Simmer!" Still, we  
 know that Shylock's claim to An-  
 tonio's flesh had justice for its pretext,  
 and to disarm enmity of its arrow, I  
 deem it admissible to say, should oc-  
 casion require, we are willing to wel-  
 come the truth of Portia's plea and  
 agree that "mercy should (sometimes)  
 season justice!"

## Jobbers vs. Brokers.

Closely connected with the question as to the relation of manufacturers to  
 the trade is the subject of brokers, to the annoyance resulting from whose quota-  
 tions a good many of the jobbers referred. The following paper of W. H. Ket-  
 tig, Birmingham, Ala., on this subject will be of interest:

### Jobbers vs. Brokers.

BY W. H. KETTIG.

I have been asked by your worthy  
 president to deliver an address before  
 our association on the subject of  
 "Jobbers vs. Brokers." As we have  
 much business to transact, and as our  
 time is limited, I will ask the indul-  
 gence of the association for as short a  
 time as possible.

In times like these, when we are all  
 passing through the most severe com-  
 mercial depression this country has  
 ever witnessed, there are many changes  
 in the methods of transacting business.  
 The prudent man begins to get uneasy.  
 He looks around to see if his condition  
 cannot be improved. The jobber's  
 business, like all others, has fallen off,  
 and consequently his orders to the  
 manufacturers are few and far be-  
 tween. The latter, being disappointed  
 because of small orders, thinks that he  
 is losing business, and therefore be-  
 stirs himself. The next time we hear  
 of the manufacturer he is either try-  
 ing to sell the retailer and consumer  
 direct, or had appointed a "broker"  
 who has "desk" room in your city.

Among the many evils that afflict  
 the wholesale Hardware trade to-day,  
 there is none more mischievous, an-  
 noying and meddlesome than the citi-  
 zen known as your "local or resident  
 'broker.'" I refer particularly to the  
 "local broker," who is generally a dis-  
 charged salesman or a broken down  
 merchant. He perhaps seeks your  
 trade, and having obtained it will offer  
 his goods to your customers at prices  
 the same, or nearly the same, as he sold  
 them to you. He carries no stock and  
 employs no capital, and is therefore  
 under comparatively no expense. Why  
 can't he sell goods cheaper than the  
 large wholesalers who are expected to

carry a large stock, who have many  
 men employed and are consequently  
 under heavier expense? This is espe-  
 cially true where the manufacturer  
 furnishes the broker with his very  
 lowest prices. The latter does not  
 discriminate between the large and  
 small buyer, but offers both the same  
 prices. He is out to make his com-  
 missions and he cares not what mis-  
 chief he may create. In this connec-  
 tion I do not refer to that class of  
 brokers or commission men known  
 as "direct representatives" or sales  
 agents of large manufacturers, and  
 who only sell to the wholesale trade,  
 but only to the local broker located in  
 your midst, who dabbles in every-  
 thing and anything to make his small  
 commissions. Such an individual is a  
 detriment to the community he resides  
 in. He not only injures the jobber,  
 but is equally as harmful to the retailer  
 or consumer. The latter is induced to  
 buy more than he needs and his ac-  
 counts are consequently divided among  
 many people. If he should want an  
 extension or any other accommodation  
 he is unable to obtain it. If he had  
 dealt with his nearest reliable jobber,  
 he could get along with less stock and  
 would consequently owe less money.  
 The jobber, understanding his needs,  
 would be able and willing to grant him  
 any favors desired.

The operations of local brokers dis-  
 courage jobbers from carrying large  
 stocks. Here again the retailer is in-  
 jured, for it is to his interest that the  
 jobbers carry as large a stock as possi-  
 ble. The larger the stock of the jobber  
 the more convenient it is for his custo-  
 mer.

Gentlemen of the association, the  
 evil mentioned here is only one of many  
 that afflict the wholesale trade of the  
 South to-day. It is growing, however,  
 and unless the jobbers do something to  
 check it there may yet come a day

when the trade will be controlled by brokers. If the jobbers stand idly by and let the manufacturers sell goods the way they please, the time is not far distant when the brokers will have absolute control.

I would, therefore, like to have the association speak in no uncertain sound on this important matter. Let us appeal to the fairness of the manufacturers and request them to discontinue this unfair system. If appeals are in vain, let us purchase nothing from these manufacturers who persist in being represented in your community by a broker. We must demand of the

manufacturers protection from this unreasonable competition.

The manufacturers of the United States are intelligent people. They know that the jobber is their indispensable friend. All that is necessary for us to do is to lay the matter properly before them, and I believe they will do anything reasonable to promote the interests of the jobbers and thereby benefit themselves.

In conclusion, I would suggest that this paper be referred to the proper committee, with instructions to take such action as they deem best.

Your committee urge that prompt action be taken at this meeting on this important question.

TO AGREE IN REFERENCE TO GOODS HELD SUBJECT TO ORDER OR RETURNED BY CUSTOMER.—We do not consider this part of our report of very great importance, and as there are so many causes why an article does not give satisfaction to a customer, we think it wise not to make any iron clad rule, but let each member of this association settle this matter with his customer in a way that will be satisfactory to both parties, after having all the facts before them.

#### Address by Frederick Orgill.

The Irishman possessed of the historical flea could have experienced no more disquietude or mental anxiety than does the jobber when confronted with his travelers and those important factors in his business, viz. :

Terms upon which goods are sold, and the dating of bills ahead.

The sale of goods in the spring payable in the fall to any supposed to be desirable customer who requested it was cheerfully granted up to three years ago by the majority of the jobbing trade of this city.

In the fall of the year 1890 unusually heavy losses caused an exhaustive search to be made throughout our books for a period extending over the years 1885 to 1890. This search revealed the fact that 75 per cent. of our losses were on goods sold to fall time customers.

As an experiment, in 1891 we decided to give up the sale of goods to customers desiring fall time and do an exclusively 60-day business. This plan reduced our gross sales some 20 per cent. as compared with the previous year. Yet the result showed up so satisfactorily on account of diminished losses that we have at the present time not a single customer on our books whose bills are payable in the fall.

Our experiment, or test, was the more remarkable when it is known that the grocery, dry goods, shoe and drug trades of this city were all extending fall time to their customers.

The severe financial crisis through which the country has passed the past year forced many manufacturers to sell jobbers on a cash or short time basis; consequently the jobbers were forced to adopt a similar plan, proving the truth of the old adage, "An ill wind," &c. The panicky times of the summer of 1893 caused many of the largest houses in their respective lines in this city to reduce their terms to a 30-day basis, and we are advised that their sales are as large in 1894 as they were in the corresponding months of 1893. We believe that very few sales have been made by jobbers in any line this spring payable in the fall.

The question of shipping Hardware, Implements, &c., in December or January, and dating the bills in February or March, is also worthy of much attention.

We believe that our traveling representatives of their own volition, and not by the request of our customers, are responsible for 90 per cent. of our bills being dated ahead.

To recite a case in point in which one of our travelers was the central figure might not be out of place. About December 20, 1893, Mr. —, the traveler in question, was preparing to leave on his annual spring trip, and incidentally receiving a few instructions from one of the firm. Mr. — said: "Mr. —, I am going to make a country trip in a buggy first, which will consume about three weeks, and will then finish on the railroad and consume the same time. Now I may

## Dating Bills Ahead; Granting Fall Time on Goods Sold in Spring, and Terms on Which Goods are Sold.

The above closely related subjects were considered by a committee, of which W. E. Gibbins was chairman. Considerable discussion was elicited in regard to the subject, the importance of which was referred to by many of the members, there having been of late an evident disposition toward the extension of time on which goods are sold. The matter of charging for box and drayage is also, it will be observed, referred to in the report of the committee, and the opinion of the convention was evident that such charges should uniformly be made, especially in view of the fact that leading jobbing houses in other parts of the country are pursuing this course. We give in the following columns the carefully prepared papers of Mr. Gibbins and Frederick Orgill, another member of the committee.

#### Report by W. E. Gibbins.

DATING BILLS AHEAD.—This growing practice with the Southern Hardware jobber is a great evil and should receive its death blow at this meeting. We find in corresponding with some of the largest jobbers in the country outside of our association that this custom, as a general rule, is practiced to a very limited extent.

There is no reason why Axes should be sold and shipped in the months of May, June and July and dated the first of September and October. In some few lines of goods it may be desirable to sell in advance of the season and date bills ahead, but this practice in many cases is used to excess and many goods included in these bills of advance dating that should not be there, but should date on date of shipment.

Your committee urge you at this meeting to pass a resolution not to give advance dating on any general bill of Hardware under any circumstances, but only sell them on regular terms, the time to begin on the day the bill is entered upon the books. We would also recommend that seasonable goods sold previous to the time desired for the use of same by the consumers be dated only on date of shipment. If our representatives sell such seasonable goods in, say, January for delivery May 1, such goods be either dated on day of shipment in January or not shipped until May 1.

TERMS ON WHICH GOODS ARE SOLD.—It has been wisely said that "Short profits and long time are not harmonious partners." They are "opposite" terms and cannot be made to work together.

Your committee would suggest, "Short profits and short time or long profits and long time" would be more congenial partners.

On careful investigation we find that all jobbers of Hardware not members of this association who sell goods in the South, do not give longer time than 60 days; and a number of the largest jobbers make their terms on heavy goods 30 days' time and on shelf goods 60 days' time. The universal discount on 60 days' goods seems to be 2 per cent. for cash in 10 days from date of invoice.

Your committee would recommend uniform terms on all goods of 60 days' time, with 2 per cent. for cash in 10 days and 1 per cent. for cash in 30 days from date of invoice.

TO AGREE NOT TO SELL GOODS IN SPRING AND EXTEND PAYMENT TO FALL.—While the practice of selling goods in the spring and extending the payment of these bills until fall, so far as we have been informed, has only been the custom of the cotton growing sections and does not affect the entire membership of this association, yet we beg to advise that this great evil be entirely blotted out, so far as the Southern Hardware Jobbers' Association is concerned, and by thus taking the lead in this measure of reform others who are not members of this association will not be slow to imitate our example.

TO AGREE TO CHARGE FOR BOX AND DRAYAGE.—Now is the time to take a firm stand on this question. It is a heavy expense to every jobber of Hardware, and a customer should no more think of demanding that his goods should be furnished free of box and drayage than he should ask that his jobber furnish him free of charge a keg of Nails, a Shot Gun or any other article of Hardware. One member of your committee has investigated this item of expense in his own firm, and finds it such a large item that it would affect the profits of his firm more than their losses of bad debts. We also find, so far as we have had time to investigate, that all jobbers of Hardware not members of this association, but who sell goods in the South, makes this charge for box and drayage, and insist on the settlement of same by their customers.

We would recommend that this association agree in all cases to make a reasonable charge for this service and not rebate it in settlement with customers, and that some printed formula be adopted, and that the jobbers in each city have this formula printed and distributed to all the members in their respective cities and by them sent out to their customers with their regular correspondence. By this method you will put a stop to the few customers in demanding that no box and drayage will be paid by them. We are prepared to furnish copies of the forms used in some of the Eastern markets.

meet some parties that are not quite ready to buy when I call, but before I get back again they will need the goods and will order from some 'Philistine' who happens that way. Now don't you think that in cases like these I had better secure their orders when I am there, by dating bills when they will need the goods? Then we will be sure of them."

After thinking over the matter, Mr. — was told that when such special emergencies arose he was at liberty to use his discretion, but to be very careful in exercising this privilege. Mr. — assured us that we could rely on him.

The buggy trip that Mr. — took resulted in the receipt of 90 odd orders by us, and over 90 per cent. were dated ahead, and nearly every order was underlined about as follows:

"Ship quick."

"Get out my orders as fast as possi-

ble. This party says you were slow in shipping his last order. These are good people, ship quick; let some one else wait. Treat them nice. Get off promptly."

"Have been trying to sell this firm eight years; want you to ship goods quick, and we can hold their trade."

Mr. —, notwithstanding his power of dating ahead, was somewhat summarily revoked, is still with us, and this spring sold several hundred orders, of which only some 7 per cent. were dated ahead.

In union is strength, and we believe that by agreement and combined efforts of the members of the Southern Hardware Jobbers' Association and their friends, "the enemy" in competitive cities that the dating of bills ahead can be entirely abolished, and Hardware at least, can be sold on a 60-day basis throughout our Southern country.

## Local Associations.

A very interesting report in regard to the desirability of forming local associations was presented by Major Edward Buford, Nashville, Tenn., from which we make the following extracts:

### Local Associations.

BY EDWARD BUFORD.

Your committee after conference and consideration would respectfully report that we realize to our sorrow that the Hardware business by reason of bad management and senseless competition has been allowed to drift into a very unsatisfactory condition; that it has become almost a question of the "survival of the fittest," and unless something can be done for its improvement, many who are now engaged in the business will eventually be forced into liquidation. After looking carefully into the trouble, we believe that the remedy lies mainly in local trade associations. That local associations should be formed in every city in the jurisdiction of the Southern Hardware Jobbers' Association where there is more than one wholesale dealer.

Your committee regard trade associations as the keystone to the arch of successful business under existing circumstances, and through this agency much of the ruinous competition can be removed. We cannot too strongly urge the formation of these associations, and also that the associations in contiguous cities be asked to act in harmony. There is enough business for us all, and every jobber can get his portion at a remunerative price if confidence can be restored through these associations.

We do not believe that such conditions exist in any jobbing town in this territory which will make it impossible to form a local trade association. Much, if not all, the friction and bad feeling engendered by the sharp competition in the past can be removed, and the friendship which once existed among members of the Hardware business can be restored.

Reference was then made to the working of the association in Nashville and the beneficial results which have followed, the report closing as follows:

We believe that this convention should place itself on record as being heartily in favor of local trade associations, and that members from cities where no associations now exist should go home from here determined to form one as soon as possible. All of which is very respectfully submitted.

Continuing the discussion of the same question and advocating the formation

of local associations in all the principal cities, Mr. Buford remarked:

It has been said that the sweetest music to the ears of the ordinary man is the sound of his own voice. However much this may apply to the ordinary man, I am sure, sir, that you will agree with me in saying that it does not apply to the Hardwareman. But, sir, if anything will loose the end of the Hardwareman's tongue, and make him talk, it is the subject which is always nearest his heart—the Hardware business.

I would to-day that I had command of language to so forcibly impress this matter on the minds of the members of this convention that not a member within the sound of my voice would any longer decline to join hands with his friends and say emphatically, "Let us stop this foolishness."

If the members of this association will reflect a moment they will realize the senseless slaughter of prices in which we have all been engaged for years past has its origin in personal spite, and has been fanned by a desire for revenge for some injury either real or fancied; and I stand here to maintain that, in a majority of cases, the injury is fancied and has no base on fact.

Nothing I think but spite would make us lose sight of the trite old aphorism, "Live and let live." I do not know where the expression came from, but it is forcible enough to come from the Bible, and this convention would do itself credit by adopting it as its motto.

The Hardware business, Mr. President, is unique in that it attaches to itself its members more closely than does any other line of commercial business. Every man in the business, from the porter who sweeps the floor to the proprietor in his cozy office, is proud of his line, and resents as a personal affront any slight to his business. It may almost be classed among the learned professions, as the voluminous literature, endless lists and misleading discounts make it impossible for any man to succeed in it without being a student. I can recall no man in an acquaintance of 28 years who has voluntarily quitted the Hardware business and gone into another line.

If the gentlemen present will reflect, it will bring to mind a remark made by a large majority of the applicants for situations: "I think I would like the Hardware better than any other business." This impression has taken firm hold on the public mind,

and every young man who obtains a situation in the Hardware business feels that he is on the road to fortune, that his feet are on the bottom rung of the ladder, and he has only to climb in order to gather the ducats which are awaiting to be gathered at the top.

This may have been true long ago, but it was before a majority of those present went into the business. The high moral character and social standing of the Hardwaremen, no less than their success, has attracted to the Hardware business a class of men with no special fitness, no education for this particular line, and through their influence many of the objectionable features of which we complain have been engrafted on it. No man, no matter how bright he may be, is fitted to be a Hardwareman without some special training. In the good old times long ago the proprietor was very particular to whom he gave a situation in his store, because he regarded his clerk, if honest and capable, as his future partner. He looked over the list of the sons of his friends, and selecting the brightest boy in the lot proceeded to make a Hardwareman of him.

The boy always commenced at the bottom and was promoted through the different grades in the store as he became fitted for the duties—errand boy, stockman, shipping clerk, salesman, and finally was started on the road as traveling man. He had been taught all the details of the business thoroughly, how and where the goods were made, and by whom, and as many of the points concerning them as possible, so that when he met a customer in the store he was capable of making a good impression. He was taught above all things that he was not allowed to resort to any of the tricks which to-day are regarded as elements of good salesmanship. The young man would have lost his place if it had come to the ears of his employer that he had made prices to a merchant who had bought a bill of goods for the purpose of dissatisfying him. Do we do so now? The average salesman of to-day is but a sorry toy, with but one trick. Low prices is his only argument, and he never expects to sell a customer two bills of goods at the same price.

The question of local associations your committee regards the live, vital issue before this convention, and through them also can the Hardware business be dragged out of the "slough of despond" and placed on the high plane where it belongs. I do not think that I can do better than to give you a short history of the association at Nashville. About four years ago three members from Knoxville, one from Chattanooga, and yourself from Memphis, came to Nashville to talk the matter over with us. Out of that visit grew this convention, and we may be pardoned for the pride we feel at its success. After the meeting was over the Nashville men talked the matter over, and for quite a while we despaired of ever doing any good. Finally, realizing that the situation was desperate, that something must be done, it was decided that I should approach the man who for ability and success in business justly stands at the head of the business in Nashville—perhaps at the head of the Southern Hardwaremen as well. He listened to my speech respectfully, and after I had finished said, "I cannot trust them. What assurance would I have that they would act honorably?" I said to him, "Those men are gentlemen, and I will stake my reputation that they will do anything they promise. Besides," I said, "do you know they say the same thing about you? If they can trust you, you certainly can trust them." It was finally agreed that we would take the items mentioned in our report and try them for a month.

## Syndicate Buyers: Their Connections and Methods of Business.

The committee for the consideration of the question as to the position of syndicate buyers and their relations to the trade gave careful attention to this subject, as evidenced by the reports from several members of the committee which are given below.

### Syndicate Buyers.

BY W. A. CHENOWETH.

I do not feel that it is my duty to criticize the method employed by syndicate buyers. We have all heard a good many reports that are damaging to this method of business. In answer to the first question, I would say that the location of an A1 buyer is certainly in his favor, as no one should question that with daily conference with manufacturers the right kind of a buyer should be able to get information more promptly and more reliably than a house at a distance depending on traveling salesmen.

As to the ability to buy in large lots, the buyer of large quantities certainly has the advantage over one who buys in small quantities.

The buyer for several houses must be constantly furnished with information in regard to prices and watching changes. As he will buy a great many times, according to his clients, and be ready at all times to place his orders for all kinds of goods, he will, of course, hear of all cuts.

The buyer should confine himself solely to jobbers. My understanding is that there are a great many in New York who do not.

It seems to me that it would be a very injudicious buyer who would take retail trade.

As to the manufacturers quoting "prices special to you only," a great many traveling men will talk this way, as, of course, it is to their interest to do all they can to discredit the buyer, as he necessarily deprives them of a great many orders, and it rarely happens that the "special to you only" comes direct from the house itself. In such cases, I believe that many salesmen (when they know that a house is connected with a syndicate buyer) will offer lower prices, for they realize that they cannot hope to secure orders at equal prices.

Of course, a judicious buyer will not abuse the information given by the manufacturer, or use it to his detriment.

In regard to the "cave under, bed rock" prices, it seems to me that it depends very much upon the terms of the contract. Of course, if the manufacturer makes the buyer a special price for a special client, with the understanding that no one else is to get it, the judicious buyer will certainly respect the manufacturer's wishes.

I cannot see that the last objection is chargeable to the buyer. It is certainly the jobber's privilege to buy only such a quantity of goods as he wants. There is no more reason for a jobber to overstock himself with a New York buyer than when offered special prices; in fact, less reason, for if buying for special prices he must take a large quantity in order to secure the low price. When his orders are placed with those of other houses he does not have to buy a large quantity, but gets the benefit just the same. We know from experience that we get a better price by buying 50 dozen of an article than we do when buying five dozen. When a buyer can see four or five salesmen a day he is more likely to secure low prices than when he sees only one.

I do not wish you to infer that I

wish to say anything to the detriment of traveling salesmen, as I was one myself for 12 or 13 years, and often wish that I was on the road again.

If it is in order, I would like to suggest, though it is not an original idea of mine, as several members, knowing that I was on this committee, have communicated with me in regard to it: One of the principal objects of our association was to bring about friendly relations and to do away with all jealous feeling. If this can be done, the plan of the association to employ a buyer and locate him in New York would prove a great advantage and convenience to each member, as his office would be headquarters to any member visiting there; a place to have small shipments sent from, besides the reports of the market he would send out. It would also be advantageous in working off overstock, as a great many of us from time to time accumulate odd goods, and by sending a list to the buyer he could communicate with each member and make exchanges that would be of benefit all around. Each member could pay, say, \$25 per month, and this would secure a first-class man.

I have not thought of the details, but would suggest, with the approval of the majority of this committee that the president appoint a committee at once to investigate this matter and see if we cannot have a settlement at this meeting.

### Syndicate Buyers.

BY W. W. WOODRUFF.

The use of syndicate buyers will depend largely upon the *personnel* of the firm and the number of partners.

It can readily be seen that under certain conditions a syndicate buyer would be of great assistance.

1. Where there is only one member of the firm, who must give his time to a general supervision of the business, and he having passed the active age for giving personal attention to the multiplicity of detail necessary to the proper conduct of the Hardware business. And here let me inject the remark that of all mercantile lines Hardware stands at the head for detail. An ordinary business, as now conducted, contains about 4000 items. Each of these items has the details of size, quality, cost and selling price, swelling the items to the small and simple matter of about 16,000 things to remember. Is it not a wonder that more of our fellow craftsmen are not found in the insane asylums?

With such a business, so full of endless detail, no one man can attend to all of the different departments, such as financial, credit, buying, selling, stock, &c.

Therefore, a firm consisting of one member must have all the aid possible in buying his goods at as near bottom as he possibly can, and in such an instance as named above a first-class New York buyer would render great assistance.

2. In a firm consisting of two or more members, with the labor and responsibility divided out among them, a bright, energetic, educated Hardwareman ought to do the buying, and do it better without the aid of a syndicate buyer rather than with it. Such a

buyer ought to combine the duties of salesman as much as possible with his special work, as the best buyer is the one who is the best posted as to the wants of his territory and has a personal knowledge of the stock to be bought, which is only to be obtained by personal contact with it.

3. In a certain degree it is injurious to a Hardware house to have a syndicate buyer for the following reasons: Every syndicate buyer sends a list of his patrons to every factory. When you write to the factory they immediately place you in the balance and debate in their own minds whether they can afford to quote you a low price and make the buyer mad, or quote you such a price as will force you to go to your syndicate buyer, who claims your house as his personal property.

4. The conclusions which I draw are these: That if your firm has well equipped partners you do not need a syndicate buyer; but if the firm consists of one man, he must have all the assistance he can, and may use a syndicate buyer.

These suggestions apply to houses doing a business under \$500,000. Any firm doing a very much larger business, it might be best to keep a resident buyer in New York to attend to its business solely.

5. Our connection with syndicate buyers, although we have the fullest confidence in their honor, integrity and ability, has not been profitable, and we have discontinued the arrangement.

### Syndicate Buyers.

BY JAS. J. MANDLEBAUM.

This subject offers indeed a wide scope for discussion. However, I shall view it from the offensive, believing that in doing so general benefits will accrue to this association. In the first place, let me say our company employ a buyer, paying him a stated salary per annum, and there is no question in my mind as to the legitimate business of a syndicate buyer; nevertheless it is abused by some to such an extent that it is very much to be doubted if any benefit is secured. When I say abused I mean that some syndicate buyers are so anxious to get clients that many have on their books houses that make no pretense of being jobbers, but are simply retailers. This being the case, jobbers are injured rather than benefited. I would suggest that this matter be taken up and handled carefully and thoroughly. Another objection is the variety of goods used in different markets, and to substitute is not satisfactory, and in such cases the quantity discount in the lines handled is not obtained. Again, circulars and letters come from these parties suggesting that orders be sent for certain kinds of goods "to get the quantity price at the end of the season." You do this, and perhaps his entire orders will not aggregate the quantity. Then the smaller trade are offered jobbers' prices. If he fails in this we are then asked to pay the advanced prices.

Again, it is often the case that manufacturers will not quote our buyers as good as we can get direct from them. Some manufacturers would like to give you their best prices; when they know you have a buyer engaged they refuse to do so, fearing that those prices will be given to trade they do not consider entitled to their best prices, and in that event it works a detriment to such houses. Can we not compose a better syndicate ourselves? What could be the objections and what manufacturer or large importer would resist this scheme? Say, for instance, 10,000 Hoes would constitute the bottom price, and so on through the line. One concern could



buy and distribute, and in so doing the manufacturer would know that they would be in the hands of jobbing houses. I believe if we pursued this course we would not have to buy as many goods as we are forced to do now, and less cutting of prices would exist among us. I am strongly in favor of engaging a suitable person to be under the direction of the proper officers of this association, his duties to be defined by them. If we had such a person I do not believe any one now having a buyer would much

longer continue his services, as he could do equally as well and at considerably less expense.

The following ideas from members of our association will help to prove my position—viz., that syndicate buyers will soon become a thing of the past. A few more meetings like this and we will have weeded out the mysterious things that hinder us in our business; and while you may not all be ready to agree with me to-day the time is near at hand when we will paddle our own canoe.

## Manufacturers and Their Relations to the Trade.

The question as to the relation of manufacturers to the wholesale and retail trade, and also to consumers, was one that received a good deal of attention from the association, and several interesting papers on the subject were presented. Considerable discussion also resulted and several matters which the jobbing trade desired corrected were alluded to. Among these are the fact that consumers are in many cases supplied by the manufacturers instead of through the trade; that many manufacturers sell direct to the retail trade and at prices closely approximating those given to the jobbers, and that quotations in behalf of the manufacturers are often scattered broadcast by brokers. At one of the sessions a resolution that the Southern Jobbers' Hardware Association enter a protest against manufacturers selling goods to the retail trade was adopted and referred to the Complaint and Grievance Committee. In the following columns we give the paper presented by C. H. Ireland of Greensboro, N. C., chairman of the committee, and also the paper of James J. Mandelbaum, another member of the committee.

### Manufacturers.

BY C. H. IRELAND.

The source from which we obtain our supplies will always be a subject of intense interest to us all. Not only is this true of us as Hardware jobbers, but it is a strain that runs through the grand symphony of effort that is being played by earth's toiling millions; and not infrequently its strain can be detected in the minor key, followed by the loud crescendo of "Where, oh, where, can bottom be found?" and dying away in the soft strain of "Hush, step softly, the sheriff's around!"

It is a subject that has tried the elasticity of our greatest minds. Statesmen, soldiers, scholars, artisans, manufacturers and citizens have all been confronted with this great problem; and many have, like Jaundyce & Jaundyce, in Dickens' famous "Bleak House," simply waited and longed for the end, while many others, like Mr. Micawber, have prayed for "something to turn up" and are still waiting. The fact is that so important has this matter become that our grave Senators, who receive \$20 per day for their arduous duties in behalf of this grand nation, actually think that it is of enough importance to lengthen a day's labor to three hours per day; and if it were not for calling the roll, reading the proceedings of last day's session and listening to personal privileges, would devote at least half an hour of their time to this grand subject of tariff or the source from which we obtain our supplies.

Yes, my comrades, this is a question that affects us all. The sturdy frontiersman, with axe and gun, on the outskirts of civilization, and the enterprising citizen who follows in his wake, building towns and cities, the manufacturer with his dependent help, the gentleman of means and leisure, who looks about for some plan to invest his ample funds, are all met with the same question, and to all alike it is of intense interest—the source from which we obtain our supplies.

Particularly is this true of that class of citizens who depend for their daily

bread upon margins, and live upon the profits made on goods sold over the counter. This class, more commonly called merchants, has its different divisions, and, whereas they are each affected in a degree, I think I hazard nothing in saying that to the Hardwareman is this a matter of more importance than any other class of men, for the reason that the mode of doing business among our class of trade is, in a measure, different to others. And of all Hardwaremen, the class known as jobbers are the ones who are more interested than all others as to the source of supplies, and when and how they come. Now, the word jobber should be defined.

The manufacturer's idea, as I have been able to gather it, is as follows: The man who buys all of his goods direct, who never could or would conceive of any article being ordered in less than gross quantities and original packages, and the manufacturer is alone to be the judge of what composes the original package. He should know to an item 12 months ahead of time just what he will want in season, should buy his goods from him because it is him, should never inquire a price once having placed his order, though the price may have been guaranteed; who is expected to pay cash for all purchases, particularly if no cash discount is offered. He should read the future. He should buy goods on declining markets and act as a splendid fellow, whose highest aim is to see that no manufacturer is left with stock out of season to carry over to the next. He should travel men, pay \$6 to \$8 per day traveling expenses over a territory where his average sales could not possibly exceed \$75 per day, and do this on a basis of 2½ per cent. allowed him as a magnanimous difference shown by the manufacturer between the jobber and retailer. But to complain, n-e-v-e-r.

Again, he is expected to sell all the trade with questionable credit; particularly is it true if they happen to buy in small quantities. But in no instance is he presumed to sell anybody whose credit is above reproach, or one who buys as much as would constitute a shipment at one time. Again, he is one

to whom the manufacturer shows the most loving consideration by assuring him he sells none but the strict jobber, but he forgets to say that he has just that day made a price to some local commission broker who quotes these same goods to every one, from the wholesale dealer down to the smallest retailer in or out of the trade, at not infrequently the same or even a less price than that made by the manufacturer himself, while this dear, precious jobber sits still, and is expected to hail with glad acclaim the startling announcement:

Mr. A., representing The — Factory direct, expects to call on you next Friday. Please be at your office early so that I can get off on the six o'clock train in order to make — by Sunday —.

I would say my interpretation of that class is—that particular class which deals exclusively with the manufacturer, importer or their direct representatives, who buys his goods in what may be termed full cases, who looks ahead and decides his wants and thus enables himself to supply the manufacturer with orders in advance to keep his hands employed, who is, in other words, the outpost of the manufacturer, and one who should be so sensitive to the strength and direction of trade winds that his judgments are prophetic in character, and should act as a barometer or the output of the manufacturer. A man who should act as a depositary for manufactured goods, who should do business on a plane that recognizes the three branches of trade—the manufacturer, the jobber and the retailer—and whose honor is such that he will not encroach upon the prerogative of either of the other branches, who keeps abreast of the times, keeps traveling men on the road and pays them for their work, requires them to sell goods for a profit; one who can conceive of a competitor as entitled to live, and can think of such an one being an honest opponent without his being necessarily a thief because he is an opponent.

Now, it is this class that is here in convention assembled to-day, and it is to talk upon the source from which these get their supplies that I desire to have your attention for a while. The first question that occurs to my mind is, Is the jobber necessary? I judge this company would be very affirmative in their announcement; but is he necessary, viewed from other standpoints than that of pure selfishness? I affirm that he is. Both to the manufacturer and retailer he is a necessity.

There never has been, and never will be, a time when the manufacturer can afford to do his business on the same basis as the jobber. The limit of territory, the loss of claims, the incident of expenses necessary to traveling for one line precludes the idea, while the more important item, that of the destruction of the jobber, would mean the financial ruin of the manufacturer.

I affirm here, without fear of contradiction, that in the recent panic through which we have passed, if the financial burden in the way of depreciation in values had not been distributed among the jobbers as well as the manufacturers, the result would have been ten times more destructive to the manufacturing industries of the country as it was, and if the hidden things could be brought to light, there could be shown very few manufacturers who have not been rendered material aid by their jobbing friends.

It is a known fact that the United States is the greatest mercantile nation on the globe. Why? Simply because of her splendid system of distributing her resources. And I challenge a refutation of my assertion that in no country on the globe can there be shown such mercantile es-



establishments as are produced in the United States; and I claim that the most potent factor in the mercantile world to-day is the jobber.

It is a known fact that no retail merchant will ever be found, who will be willing to take an 8 or 12 month risk on his purchases, so as to provide work ahead for the manufacturer. No manufacturer can determine what kinds and how many goods to make up for 100 different sections of country, and the result must necessarily be confusing and disastrous. This work must be done by the local jobber, and the sooner this is recognized by all manufacturers and certain rights accorded him (and those rights fully maintained will bring about an amicable arrangement between the local jobber and the retailer), the better it will be for all classes. The solidarity of these three branches of trade is a necessity if we ever have harmony.

Let me cite a case. Now, mind you, I am claiming the existence of a class known as the jobber as a necessity for the proper conduct of business, and if necessary we should not, we cannot afford to trifle with him. A (a manufacturer) comes to my place. He fails to sell me. He can sell B, a retailer, half, or even quite as many goods as he does me, and charges him 5 per cent. advance. This same party (B) has been paying me 25 per cent. on the same goods. Now there is an opponent of B's, whom we call C, across the street, who is also one of our customers, but who buys not quite so many goods as B, but pays his bills promptly and is B's strongest opponent. Both have been my customers. After this visit of A, B displays this article they have both been buying of me at 20 per cent. less than it has been sold for, and I'll state right here by way of parenthesis, it invariably follows. I never knew a case otherwise in which a retailer secured a better price than he did not immediately change his selling price to correspond, and not infrequently on his lower price his per centum of profit is much smaller. Now to the result. C comes to my place at once with the following dialogue: "Has such an article declined?" "No." "Well, how is it that B is selling his at my cost? I want more, but I can't compete." I promise to look into the matter. I confer with B. Yes, he has just gotten in a lot from the factory direct. "Why did you not give me a chance at it?" "Well, A said he sold you and he would not give me the same price that he did you." I reply, "Why, I'll guarantee my price to be the same as his." He thereupon tells me his price. I, of course, have to sell him his next lot of goods at this same price, and in addition I have now to appease C, so I go to his place and sell him at a price that will enable him to sell his goods at the same price. I can't sell goods at 5 per cent., so I am now on the war path for a price to meet A's quotation, and (pardon the egotism) the price always comes.

Now, the price made by A as a special, and which never should have been known, becomes the established price, all because A did not have the back bone to leave my town without booking an order, or else the policy of A's house is such that he is compelled to make sales irrespective of the consequence, he being forced into this mode of doing business in order to retain his position.

Now, I submit, my Fraters, it is the repetition of just such acts as this that leads to the demoralization of prices under which we labor to-day. Now, I have not touched on the active result, which, to my mind, is of much greater importance than the lowering of prices.

It has caused the retail dealer to lose confidence in the ability of the local

jobber, and the next lot of goods he wants he does not come as the meek little lamb led to the shearer, but reasons, if Factory A could make so much better price than I got before of Mr. Jobber, I'll give him another trial, and in addition, I'll try P, Q, R, S, T, factories and see what they have to say, and from this time on it is uphill work for Mr. Jobber ever to secure that man on his list again as a permanent customer. But some one will say this is all overdrawn. I would that it were, but, with your permission, I will read one or two letters for your consideration. I am sorry I haven't others which I left at home. (Mr. Ireland here read extracts from several letters.)

I wish to refer to two other occurrences. A certain manufacturing company of —, Ohio, from whom we formerly bought quite largely, failing to sell me, gathered up the following people, to whom they sold a car, giving them, if these parties did not tell me untruths, prices that were as close as they quoted me several cars. They sold to two retailers of my town in the Hardware trade, another of —, another of —, another, a grocery merchant, of —, N. C., and another, a village general store, 25 miles from —. None of these parties job these goods. They retail them as low as any member of this body can wholesale them.

One other case. Another manufacturer of —. I am sorry I threw their communication into the waste basket. I received a letter from them asking me why they had not heard from me lately in the way of an order. I wrote them that I had just been shown one of their invoices to one of my customers, who was a small buggy man, in which they sold him the goods at the same price they did me, and that I could not trade with any house who pursued this policy. To this they very courteously replied: I confess guilt as to having sold the parties you refer to. We are running a large manufacturing plant, and it gives us all we can do to dispose of our output. We will sell goods to any one who comes to our door, be he white or black, and one man's money is as good as another's to us. If you don't like our style of doing business, would say that we have gotten along without your trade in the past, and suppose we can do the same in the future. It is needless to say that gentleman is still getting along without my patronage. I name these cases, not with a view of singling them out as greater sinners than all the rest, but simply to use them as illustrations to show the drift of the trade toward what I regard as trade piracy.

Now, I think I have fully shown that these abuses occur. I have not forgotten that I am here to discuss the source from which we obtain our supplies, and I beg your attention for a few minutes longer while I will try to outline what I think is the duty of this convention. If we are the people who obtain the supplies, then I think it but just that we should have a say so in where we should and how we should obtain them.

That I would insist that there are three distinctive branches of trade—manufacturers, jobbers and retailers.

If a man is a manufacturer he is not a jobber.

If a jobber, not a retailer.

If a retailer, not a jobber.

If we are entitled to an existence, then it behooves us to see that our rights are respected, and I have no fears that if this association will lay aside any differences that may now divide, and become a unit in our action, I believe we can solve in a very large degree the present disorganized trouble which confronts us at every turn in the shape of demoralized prices, there-

fore I claim the manufacturer should confine himself to the jobbing trade.

If any man prefers to sell the retail trade, of course he has a right to do so, and we have no right to say he shall not, but I do say we have the right, and we should exercise the right, of saying if he sells the retailer he shall not sell us. Again, we should insist that that man known as the broker, or commission sales agent, amenable to no one, and whose methods are mercantile piracy of the worst kind, and who has done more than any one agency to demoralize the market, shall not be encouraged by the manufacturer or patronized by us, and that we be not slow to make our language emphatic at that point.

There are a number of points that I would like to bring to your attention, but I will close with the request that the resolution which I offer herewith may meet with sufficient encouragement for you to appoint a committee to consider it in its every detail, and either report back this, or something of like nature, but covering the ground more completely. I offer, therefore, the following:

"Whereas, Certain abuses have crept into the mercantile usages as now conducted in our South land in the way of encroachment by the manufacturer in person, or through his irresponsible broker; and whereas this encroachment is working both to the detriment of the manufacturer, the jobber and the retailer; now, therefore, we, the Southern Hardware Jobbers' Association, in convention assembled, do enter our protest against the manufacturer selling his goods to the retail trade, or of allowing his products to go into the hands of brokers or others that are not paid stipulated salaries, or do not carry his goods in stock; and that we do herein call the attention of the manufacturers to this point, through a committee hereinafter provided for, and which shall be known as the Grievance Committee, and insist upon said manufacturers desisting from the practice complained of, and that in the event of our request not being complied with, we, without threats toward any one, still with firmness, agree not to give our patronage to those who will not concede our rights.

"Resolved, That a committee consisting of nine or ten, representing the different States who have members inside of their borders, be appointed, which committee shall be known as the Complaint and Grievance Committee, whose duty shall be to investigate all complaints made to them by members of the association, and shall have charge of all grievances which occur detrimental to our interest, and shall strive by whatever means are right and proper to adjust all difficulties that may arise in the interim between their annual gathering."

#### Manufacturers.

BY JAS. J. MANDLEBAUM.

Regarding the circular letter of President Langstaff, I heartily agree with him that it was a matter of great importance that we, before going to the meeting at Richmond, should in a measure determine what subjects we intended to discuss and that the members of the association be notified as to what these subjects were.

The president's idea of inviting suggestions is a good one and is bound to bring into discussion ideas and suggestions which would be overlooked altogether if left until we arrived at the meeting. Many good papers will perhaps not be discussed for want of time, but such papers can be placed before the members of the association and will bring forth fruit later on, if not now.

Our aim should be first to take up the prime evils and to attempt to correct them. Among the many that have crept into the business it is hard to determine which are of the greatest importance.

There can be no question, however, that those affecting our profits are of vital importance; in fact, they are all important. My first suggestion would be, then, to take up the matter of prices and profits. Discuss what has caused the present cutting of prices, and see if we ourselves are not in a measure responsible for the present state of affairs. I admit that the conditions of outside competition are such that it is impossible to form a combination of prices, but it does appear to me that, to a great extent, we could lessen the senseless cutting of prices by confiding in one another more than we do, and when we know of a cut price having been made by one of our members, ask them plainly, Why do you do this? The ruinous custom has crept into the business of each house making a leader of some article, and in most cases quite a number, until now we have nothing but leaders. Let us stop this and determine that we will have nothing in our stores that will not bring a living profit. I think that the business of this convention will be of the greatest value. We promise you that we shall always be with you, sharing your work as we hope to share its advantages, for we by our united endeavors can accomplish a great deal which without harmony and co-operation would be impossible. At these meetings we become better acquainted with each other, get each other's views and trust more in one another, and our mutual interest will form stronger ties.

I feel a deep interest in the Southern Hardware Jobbers' Association because I believe its endeavors are for the good of all interested, both manufacturers and jobbers. I feel a special interest in the personal welfare of its members, for anything that will promote their interest will aid us, and we should not cease our work until we have every jobber in the South enlisted in our good work. Why some should appear indifferent is a matter I cannot understand, as if we are successful our accomplishments will be of benefit to them, and I sincerely trust that this meeting will result in increasing our membership twofold.

I will now enter into the subject allotted to me:

#### MANUFACTURERS AND THEIR RELATION TO THE JOBBER AND RETAILER.

As a class, manufacturers are men of great force and ability, seeing quickly the advantages of their business, and appropriating those advantages to their interest, and it is a great benefit to us and to them also that we cultivate a more intimate and confidential relation with them, thereby establishing reciprocal feelings. There is much sentiment in trade. It is evidenced in nearly every business transaction, and we should feel ourselves in dangerous company if dealing with men who have none. It is the main-spring of honesty and the keystone of honor. Quite a number of manufacturers persist in stocking up the jobber and selling direct to the retailer, claiming as a subterfuge that they cannot prevent it, as he is an old customer and buys in as large lots as jobbers, and if he does not sell him some other manufacturer will, thereby losing the sale, without any benefit to the jobber. This matter should have a great deal of our attention. We should by all legitimate means strive to have every manufacturer who sells to the wholesale trade agree to confine his sales to the jobber and not sell to retail dealers.

We should endeavor to arrange with the manufacturer of special articles conditions of sale of his products. If he is sincere in his desire to have us secure a margin on his goods, he should assist in developing a method of this kind. I have no objection to any manufacturer having a quantity price, as I believe it is a true principle that a large quantity of goods should be bought for a less sum of money than a small quantity. We must try to get the manufacturer to acknowledge this fact. We must determine who are jobbers—and I say a jobber is one doing a wholesale business. There are only two classes for the manufacturer to consider, one the jobber and the other the retailer, and every dealer must be recognized as either the one or the other. There can be no middleman. The largest manufacturers of this country recognize our association as an association of jobbers working on sound business principles. There are some manufacturers who contend that if they sell the jobber the larger proportion of their wares they should be entitled to sell the balance of their goods to the retailer.

I say, refuse to have any dealings with those manufacturers who persist in this method, as, naturally, after they sell the jobber they will try to sell the best of the retail trade. I argue that the relation of the manufacturer to the retailer is the same as that of the jobber to the consumer. One of the worst features arising from the manufacturer selling the retailer at jobber's prices is the great disadvantage under which other retailers are placed by reason of retailer buying at wholesale prices, then taking advantage of the low price and selling his goods at lower prices so that other retailers cannot compete with him legitimately, thus forcing them to sustain severe losses which are many times followed by failures.

If arrangements are not made with manufacturers to avoid selling retailers, it will be but a short time before every retailer endeavors to be classed as a jobber, in name at least, in order to derive the benefits accruing from such a distinction. Often retailers buy in quantities as large as jobbers. Sometimes farmers buy in quantities as large as our customers, yet I would term the first a retailer and the second a consumer, each being entitled to only such prices as their business warrants. The principle must prevail in such cases.

I read a short time ago an article that so well explained the relation between the manufacturer and the jobber that I cannot refrain from reproducing it. It is as follows:

"When the jobber attempts to reach his customer with a line of goods, or on any matter of great importance, is it not done through his traveling salesman? One true and tried in every way to be relied on as doing the proper thing, because he is 'on the ground,' can view the whole field, so to speak, and is far better capacitated to form an accurate idea of the case. This is identically the manufacturer's position. The reputable jobber is his confidential and 'on the ground' man, with this grand exception: all risks are assumed by the jobber; he pushes the manufacturer's goods assiduously in his territory, paying promptly for same, guarding against any loss save to himself, and in the end works up an enviable reputation for the manufacturer at his own expense, in a great measure."

I believe we should indorse every word of the above.

Manufacturers may be indifferent to our entreaties, but don't allow that to make any difference. Show them that you mean what you say and are in earnest, and you will get what you want and that to which you are justly

entitled. It will surely follow. Some manufacturers prefer selling to the retailers than to the jobbers direct, their reasons being that the retailer comes in direct contact with the consumer, claiming thereby it is the easier to market his goods through the retailer than through the jobber. I conceive this to be true with some manufacturers, and I would have no objections to their selling the retailer, but such sales should be filled through the jobber.

I think that the margin of profits has been decreased in a considerable degree by salesmen and factories and importing houses calling on trade in our territory and offering them goods that rightly belong to us, and at prices that make it impossible for us to sell them. While I would not suggest a boycott of any such houses or factories, yet I would suggest that we place the matter in its proper light before them and leave it to their sense of right and justice to discontinue selling our trade.

Many manufacturers are now doing business almost exclusively through commission men, and, as a result, the smaller trade is receiving quotations from these commission men, who care for nothing but the commission they receive—hence they quote them lower prices than they deserve. It should be our endeavor to remedy this evil, as almost the life of the jobber is involved. While it is true that the Hardware trade has but few goods that we can call contract goods—that is, goods upon which a price is set to the retailer by the manufacturer—yet we have a few, and in each and every case the margin of profit as between the jobbing and retail price is very small indeed. I would suggest, therefore, that the association, through proper committees, consult such factories and ask them to make more of a difference in price as between jobber and retailer.

#### Presentation to the President.

After a portion of the toasts had been replied to, Charles H. Ireland, addressing himself to the painstaking and competent president, A. D. Langstaff through whose energy and executive ability so much had been accomplished, in a felicitous address presented him with a handsome gold badge as a token of the esteem in which he was held by his associates. The recipient was evidently deeply touched at this evidence of their confidence and made an appropriate and appreciative reply. The emblem, made entirely of gold, consisted of a cross cut saw used as a bar, with a pin on the back. On its face were the words in enamel: "Our President." Suspended from this bar by two chains of "standard gauge and correct number of links" was a circular saw with the words, "Southern Hardware Jobbers' Association" around the outer edge, and a diamond in the center. Surrounding the circular saw, which was about 1¼ inches in diameter, was a wreath of laurel. Hanging from the cross bar by chains was a padlock and key. The different pieces were variously finished so as to produce a suitable contrast.

#### Personnel of the Convention.

Particularly noticeable was the personnel of the association. Most of the delegates were good specimens of young and vigorous manhood, not past their prime. This feature must have

been in the Hon. George L. Christian's thought when on two different important occasions he referred in a marked way to the young South. There were also enough of the veterans to offer wise counsels and give the benefit of experience and mature judgment. The association approached the many questions which came before it in an earnest and practical manner, and reached nearly all conclusions with substantial unanimity and without wasting much time in needless discussion.

### Resolutions.

Resolutions of thanks to the Tredegar Company, Richmond & Danville Railroad Company, Old Dominion Iron & Nail Works Co. and Richmond Cedar Works for courtesies and hospitalities extended were passed by the convention.

A resolution was also adopted indorsing the Cotton States Exposition at Atlanta and advising manufacturers to place their products on exhibition there, and at the same time memorializing Congress to make an appropriation for the exposition.

### Reports of the Convention.

The proceedings of the convention were reported by the Richmond papers, but not at such length as the importance of the gathering justified. *The Iron Age* was the only Hardware paper present to report the proceedings, and was represented by R. R. Williams, the Hardware editor, and E. H. Darville. *The Tradesman*, devoted to the commercial and manufacturing interests of the South, was represented by J. L. Whittier and W. H. Wilson.

### Reception Committee.

A feature of the gathering which contributed materially to the success of the meeting was the acknowledged efficiency of the Reception Committee, composed of senior travelers. Among the more active in making every one acquainted with each other, which was vitally important, may be mentioned Irby Bennett, chairman, ably assisted by Henry H. Beers, Charles L. Campbell, Chas. H. Wier and others, who were publicly thanked by the convention at the close in an appropriate resolution, mentioning them by name. Edward Bernard of this committee regretted exceedingly his inability to be present.

### John P. Lovell Arms Company.

A RECENT ISSUE of the Boston *Herald* contained an interesting article giving a history of this well-known firm, portraits being given of John P. Lovell and his son Col. Benjamin S. Lovell. An illustration of the store at 131 Broad street, which is a recent addition, made necessary by the growth of the Bicycle business of the company, is also presented. The business was established over 55 years ago, and although the founder is now 74 years old he still retains his old-time vigor, and keenness and is invariably at his desk every day to overlook the large trade of the company. Re-

ferring to Mr. Lovell, the article goes on to say that no sharp practices in trade can be laid up against him, it being Mr. Lovell's pride that he has never given any one with whom he has transacted business any cause for complaint. Pleasant references are also made to Col. Benjamin S. Lovell, the efficient treasurer of the company. Col. Lovell has for years been prominent in Grand Army circles, and during the administration of Governor Long in 1880, 1881 and 1882 he was a member of the Governor's staff. Governor Greenhalge, recognizing his capacity, has also attached Col. Lovell to his staff. Col. Lovell has been a delegate to four Republican national conventions and a member of five State Legislatures. He is also prominent in Masonic and Odd Fellows' circles.

### Trade Items.

THE S. A. HAINES COMPANY, Indianapolis, Ind., inform us that they are prepared to name very interesting prices on Sad Irons and Post Mauls, in carload lots or less. These goods are manufactured in Birmingham, Ala., and their quality is referred to as being first-class.

THE BRONSON SUPPLY COMPANY, 72 Beekman street, New York, contemplate establishing a London office for supplying the European and British colonial trade with their line of Hotse Furnishing Goods, and at the same time they are making preparations to represent manufacturers of kindred lines of Hardware. The articles in which they intend establishing a foreign trade will include, besides Hollow Ware, Stamped and Pieced Tinware, Copper Ware, Hardware novelties in the line of Kitchen and Household Utensils, Wooden Ware, Wire Goods and Plated Ware. They will also handle a limited number of standard articles, such as Skates, Locks, Oil, Gas and Gasoline Stoves. The Bronson Supply Company request that manufacturers of the above lines of goods who wish to negotiate for representation abroad communicate with them.

THE TRADE will be interested in the advertisement of the Eclipse Bicycle Company, Beaver Falls, Pa., which appears elsewhere in this issue. This firm advise us they have turned out so far this year 6500 Bicycles and claim the distinction of being the fourth largest maker of wheels in the country. Only the best material is used in the manufacture of the Eclipse wheels, and particular attention is given to the enameling and nickeling of the parts, the firm owning and operating one of the best nickel plating establishments in the country. The makers also claim some special features in the Eclipse wheels which add greatly to their strength and durability and which commend them especially to the Hardware trade. In addition to a full line of wheels for ladies' and gentlemen's use the firm also make a full line of medium priced machines for the use of both sexes.

POPE MFG. COMPANY, Boston, have issued a pamphlet entitled "The Bicycle in Relation to Health," containing opinions obtained from physicians in regard to Bicycle riding and its effects. The book contains 32 pages and includes letters received from physicians in New York, Boston, Philadelphia, Chicago, Washington, Baltimore and other cities. The letters may be summed up substantially as follows: 1. Bicycle riding has an established position in therapeutics, and is recommended as a means of preventing and curing disease. 2. The position often taken by Bicycle riders is extremely faulty, and in order

to obtain the best results an erect posture is extremely necessary. 3. Bicycle riding, like all other forms of exercise, should not be practiced to excess.

B. H. ROSE has accepted a prominent position with the American Boiler Company and will be located in their Chicago office. Mr. Rose is well known in the trade, having been connected with the Hardware business for the past 20 years. He has resigned his office as treasurer of the Pullman Sash Balance Company of Rochester, N. Y.

BRIDGEPORT GUN IMPLEMENT COMPANY, Bridgeport, Conn., and 313 and 315 Broadway, New York, advise us that their Bridgeport Cyclometer has met with such a large demand that they have increased their capacity for its manufacture, so that deliveries, which have heretofore been delayed, can now be made promptly, the company guaranteeing immediate shipment of the goods.

ALFRED ELY & Co., Baltimore, have removed to their new quarters at 8 W. Baltimore street, where with largely increased facilities they hope to materially extend their business. The firm were practically established early in 1891 in a room the dimensions of which were 20 x 30 feet, and have grown to such an extent that their present quarters, containing over 10,000 square feet of floor space, are not too large for the requirements of the business. While up to this time they have confined their attention to jobbing machinists' fine Tools and Supplies, handling only the better class of goods, they expect gradually to go into a full line of Shelf Hardware and Cutlery, which they will sell at wholesale and retail.

L. BEST, 174 Fulton street, New York, announces that the exclusive agency for the sale of the Sterling Emery Wheels in that market has been given to him. Mr. Best will carry a large line of Emery or Corundum Wheels, Emery Grinding Machinery and Polishing Supplies, orders for which will be promptly executed.

T. F. CURLEY of J. Curley & Bro., 6 Warren street, New York, importers and dealers in Cutlery, returned from a two months' trip abroad by the "Umbria," arriving June 2.

THE APPOINTMENT of Henry B. Newhall as receiver for the Henry B. Newhall Company, 105 Chambers street, New York, has been made permanent and Mr. Newhall has been ordered by the court to continue the business uninterruptedly. The orders and inquiries of the company's customers will therefore receive prompt and careful attention. It is announced that the Newhall Ship Chandlery Company and the New Jersey Foundry & Machine Company, in which Mr. Newhall is interested, are not in any way involved in the affairs of the Henry B. Newhall Company, and neither company is a creditor of the Henry B. Newhall Company, being entirely independent and having an ample working surplus above the capital.

WILSON-MYERS COMPANY, manufacturers of the Liberty Bicycle, whose factory is at Rockaway, N. J., have taken the store floor and two basements at 4 Warren street, New York, for many years occupied by the Ausable Horse Nail Company. The place is being thoroughly renovated and will be used as their New York headquarters and stock depot from which to make shipments, such deliveries heretofore having been f.o.b. Rockaway. A new front will be put in, the front gratings lowered and the whole place remodeled.

UNION SHOW CASE COMPANY, 167 and 169 Randolph street, Chicago, issue a

circular descriptive of the Dempsey patent Cutlery Display Case. This is a beautifully printed eight-page folder in two colors, giving illustrations, a full description and special points of the Dempsey Cutlery Case. The circular is really a manual of instruction in the art of selling.

## An All the Year Round Rack.

**WE** ARE INDEBTED to C. T. Rosenthal, Batesville, Ark., for a sketch and description of the very useful rack illustrated in Fig. 855. It conforms in size to the shelving in the store and was designed to accommodate a number of goods which

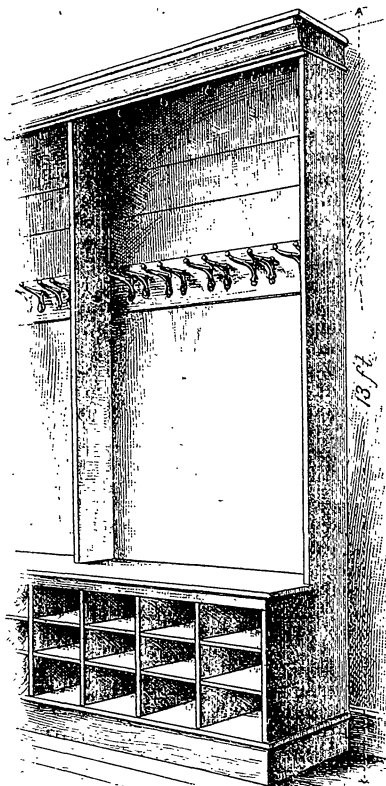


Fig. 855.—An All the Year Round Rack.

had heretofore been found troublesome to arrange conveniently. The shelves below the ledge are 36 inches deep, the spaces above being 18 inches deep. In summer the 24 openings below are used for Axe, Pick, Maul, D Shovel and other Handles, Pipe Tongs, Blacksmiths' Tongs, Wood Bench Screws, Hames and Grass, Lawn and Bush Scythes. In winter the Scythes are replaced by Fire Shovels and Tongs. Grain Scythes are too long for the shelves and are placed upright in the space above the ledge immediately above the shorter Scythes. The openings above the ledge are used for Hay, Manure and Spading Forks and similar goods, the long handled articles, arranged in pairs, being hung on the large harness hooks, the space between just admitting the handles. The D handled goods are stood on the ledge, the handles resting against the wall between the handles of the hanging goods. In winter, when Hay and Spading Forks are out of season, they are

replaced by long and D handled Shovels, Scoops, &c. At the top, above the harness hooks, large screw hooks are used for hanging Wood Saws, Coal Hods and Seed Sowers, each in their season.

## It Is Reported—

### Colorado.

That the store of the Holmes Hardware Company, PUEBLO, was damaged by the recent flood in that section to the extent of \$10,000.

### District of Columbia.

That the Hardware store of Wimsatt & Uhler, WASHINGTON, was visited by burglars on the 3d inst., and about \$200 worth of Hardware stolen.

### Illinois.

That an attempt was made, on the night of the 25th ult., to destroy the Hardware store of J. W. Richards, FERRIS. The flames were, however, extinguished before serious damage was done.

That burglars entered the Hardware establishment of Reeve, Brown & Ward, RUSHVILLE, on the 28th ult., and carried off several hundred dollars' worth of Cutlery and Firearms.

That S. J. Smith, the junior member of the Hardware firm of Miller, Smith & Co., SAVANNAH, has retired from the business. P. Miller will continue it.

That Sullivan Bros., RUSHVILLE, have sold their entire stock of Hardware, &c., to M. P. Agnew of COLCHESTER and Herbert Whitson of MACOMBE.

That J. F. Whitaker of the firm of Crane & Whitaker, FARMINGTON, has sold his interest in the Hardware business to W. F. Connell. The firm style is now Crane & Connell.

That W. I. Burnside has disposed of his interest in the Hardware business of Rouse & Burnside, ABINGDON, to his partner. Mr. Rouse will continue the business.

That D. T. Bartholomew has sold his Hardware stock, at ROCKTON, to Phelps & Waite, who have taken possession.

### Indiana.

That J. H. Reid has purchased John Callihan's Hardware store, at LYONS.

That the Jones Hardware Company, successors to Jones Bros., RICHMOND, have taken possession of their new quarters, which are stocked with a complete line of Hardware, Paints, Iron, Steel, Factory Supplies, &c. The furniture and fixtures are of the most approved style, the former being of natural oak, highly polished. All goods are sampled upon the shelves. Saturday, June 2, was their opening day, on which they welcomed their many friends and customers. In the evening the local band entertained the company's guests. James A. Carr is president of the company, Sharon E. Jones treasurer and general manager, and Clement V. Carr secretary.

### Iowa.

That the Stuhr Hardware Company, NEOLA, are making preparations to rebuild their store building in the near future.

That B. Davis & Co. are a new Hardware firm at HAMBURG. They will also conduct a tin shop.

That fire on the 29th ult. destroyed half a dozen establishments in LISBON, including the Hardware and Implement store of A. & G. Rundell.

That John Roeh has bought out the Hardware business of B. Peterson, LYONS. Mr. Roeh's son will manage the business.

That Henry North has disposed of his Hardware business, at BODE.

That O. F. Griffith, MT. PLEASANT, has sold out to Fernald & Co.

That a new Hardware store has been opened at BOONE, by Murray & Haun. Messrs. Murray and Haun are from ESCANABA, MICH.

### Kansas.

That Charles Graves' Hardware store, at WASHINGTON, was burglarized on the 27th ult.

### Maine.

That J. J. Lander is building an addition to his Hardware store, at BINGHAM.

### Massachusetts.

That Leonard Thompson has retired from the Hardware business at WOBURN. Mr. Thompson bought out Kimball & Ladd and entered the Hardware line at WOBURN in 1852, since which time he has been actively connected with it. Mr. Thompson has been succeeded by his son, L. Waldo Thompson, who has for some years managed his father's large and lucrative business, and is thus in a position to conduct it successfully.

That all the Hardware for the new court house building in BOSTON was furnished by the A. M. Gardner Hardware Company of that city.

That Charles L. Woodbury has purchased the Stove and Tinware business of Charles Friend, at BEVERLY.

That Rackliffe & Co., Hardware dealers, have closed their store at NORTHAMPTON and will hereafter confine their attention to the store at Holyoke.

### Michigan.

That Nathan Kenyon of LYONS has rebuilt his Hardware store, which was destroyed by fire last January.

That Oliver & McNaughton, ESCANABA, have dissolved partnership.

That F. W. Moon, Hardware merchant, of BELLEVILLE, has sold out to Dodge & Spaulding.

### Minnesota.

That Geo. Bostwick of the firm of Brown & Bostwick, SIMPSON, has sold his interest in the Hardware and Farm Machinery business to S. H. Brown, who will continue.

That \$400 worth of Guns, Revolvers, Pocket Knives, &c., were stolen from the Hardware store of Frank R. Brazil, MONTICELLO, on the night of the 4th inst.

That W. T. Wilson & Co. of WEST CONCORD have been succeeded in the Hardware business by C. W. Webb.

That Carl Nelson & Co. are successors of Miller & Nelson, WINDOM.

That McKinnon Bros. will soon open an Implement store at CROOKSTON.

That J. R. Hubbard, dealer in Implements, PIPESTONE, has been succeeded by F. M. Bunn.

That Joseph LaChance is intending to open a new Hardware store at LITTLE FALLS.

That Ashton Bros., dealers in Hardware, PIPESTONE, have dissolved partnership. O. R. Ashton is now conducting the business alone.

That G. A. Blair & Son, WATERVILLE, have taken possession of their new building. It is of brick, three stories high.

### Nebraska.

That the Brock Hardware Company's establishment, at BROCK, was destroyed by fire on the 2d inst.

That the store of H. E. Pankanin, LOUISVILLE, was burglarized on the 2d inst.

That the Hardware and Implement store of L. Stillwell, at PALMYRA, was damaged by fire recently.

### New York.

That the Hardware store of M. T. & S. E. Banks, at WATKINS, has been purchased by Treman Bros. of Ithaca.

That the store of L. A. Humphrey & Son, at MANCHESTER, was damaged by fire on May 25.



That Alexander McSorley, plumber and gas fitter, 108 1/2 Amsterdam Avenue, New York, is adding to his regular business a full line of Hardware and House Furnishing Goods.

That H. S. Howard is expecting to build a new Hardware store at BENSON.

That J. L. Smither's Hardware store, at MORRISTOWN, was burglarized on the 3d inst.

#### Ohio.

That the establishment of Stollberg & Clapp Hardware Company, TOLEDO, was badly damaged by fire on May 27. The fire was discovered on the top floor of the building, but through the good work of the firemen it was confined to that floor and the one beneath, the first and second floors being damaged only by water. The loss is estimated at \$20,000, fully insured.

That H. B. Treat and Dwight Donaldson have formed a partnership at FAIRBURN and will conduct the Stove and Tinware business.

#### Pennsylvania.

That the Hardware firm of Bilger & Gray, CURWENSVILLE, have been dissolved. Geo W. Gray will engage in business alone about July 1.

#### South Dakota.

That T. S. Hartley, dealer in Hardware, at HENRY, has sold out.

That C. A. Spurling, formerly of ELKTON, has opened a Hardware store at ARMOUR.

#### Texas.

That Allen J. Myers is the proprietor of a new Hardware store at BRYAN.

#### Vermont.

That H. C. Ayer's Hardware store, at RICHFORD, was robbed on the 25th ult.

#### Washington.

That B. Shaffer & Co., SPOKANE, have dissolved. H. L. Tatum succeeds.

That W. H. Dumble has sold out his Hardware business, at SUNNYSIDE, to Brewer & Crabbe.

#### West Virginia.

That Addison Harris has sold out his entire stock of Hardware, at MOUNDSVILLE, to W. W. Smith.

#### Wisconsin.

That R. J. Evans has purchased the Hardware stock of Samuel Barter, at MARKESAN.

That \$150 worth of Cutlery and Revolvers were stolen from Frank Collins' Hardware store, at LODI, a short time since.

That Chandler & Spiedel are a new Hardware firm at RICHLAND CENTER.

The Hardware trade throughout the country are requested to report business changes, improvements and other matters of trade interest suitable for mention in this department.

### Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

**White Lead.**—Grinders have been very indifferent buyers of Dry Lead, chiefly because of the fact that sales of their products have been slow lately and the condition of the market more or less unfavorable, not only in the matter of distribution, but as regards the condition of the market for crude material. Carload lots have been sold in a few instances at as low as 4 1/4¢, with usual discount for cash, and it is not improbable that orders would be duplicated for similar quantities at about the same figures. Lead in Oil has met with somewhat better sale, but the volume of business is hardly up to the average for the season. Prices continue irregular under the

influence of quite sharp competition, but show no positive change. Apparently, the manufacturers of quick process and other substitutes for corrodors' product have gone as far as they can in the direction of cutting prices without seriously impairing profits. Dry Lead has been sold at 4 1/4¢ and Lead in Oil at as low as 5¢, less usual trade discounts.

**Red Lead.**—Contracts for foreign brands for future delivery have been somewhat more numerous, chiefly for autumn delivery, with duty clause that protects buyers in a great degree. Otherwise nothing more than routine business has passed and the condition of the market is much the same as it has been for several weeks. There is no official announcement of change in prices for domestic brands, but card rates are shaded to greater or less extent when it comes to business involving lots of 5 tons or more. In fact, there is a quiet canvass for orders for single ton lots at 5 1/2¢, net cash, and the chances are that offers of 5¢, net cash, would not go a begging.

**Litharge.**—Consumers of the low grade product have been placing few and only unimportant orders. Grinders' and jobbers' purchases of the latter grades have also been on a moderate scale. In short, the market has shown a very dull appearance, and while not radically lower prices are rather weak.

**Orange Mineral.**—Buyers have operated in a very conservative way, and neither foreign nor domestic brands have been taken except in small quantities, as immediate wants required. Prices, while not positively lower, still lean more or less in buyers' favor.

**Zincs.**—New business in American Oxide is slow, and large consumers are very indifferent buyers. The market suffers chiefly from narrow outlet, there being no particular pressure to sell, nor more than ordinary offering for either prompt or future delivery.

in this connection was hardly up to the average.

### Oils and Turpentine.

**Linseed Oil.**—A very good business has been done, and this in connection with deliveries on old orders makes up a full average movement from first hands. Crushers seem to be harmonious and there is less than the usual competition. Hence prices are very firm throughout, with an advance of 1¢ quoted for Western and Eastern brands.

**Cotton Seed Oil.**—There has been only a moderate business in this line and hardly a fair average demand for either crude or refined products. Such as it was, however, the business was at about former prices and the market shows fairly steady tone in the face of the dull condition of trade.

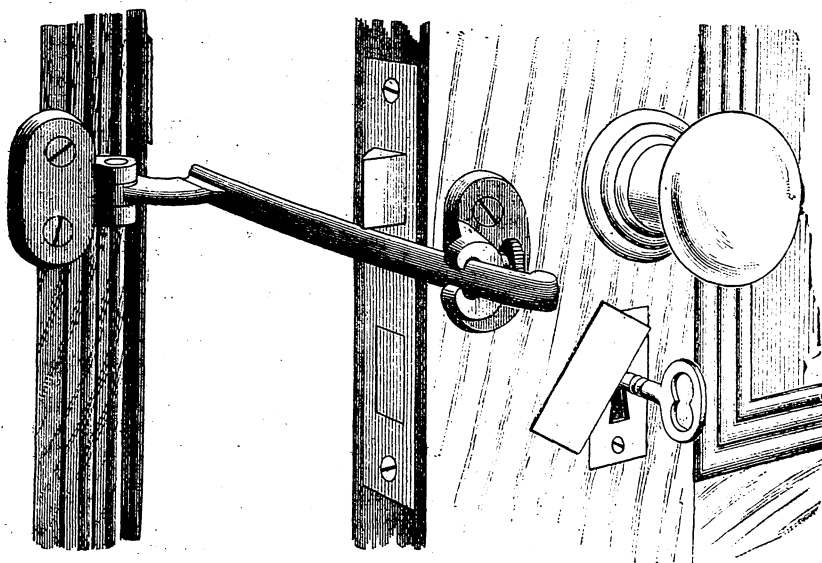
**Lard Oil.**—Slow business has been quite generally experienced, and the market is at present very flat, with prices about 1¢ lower than they were a week ago, or on the basis of about 56¢ for prime city brands.

**Fish Oils.**—In the market for Menhaden Oil and products there has been little movement, and the market is bare of new feature. Sperm and Whale Oils have fared about the same and remain without important change in value. Cod Oil is rather weak and moving slowly.

**Spirits Turpentine.**—Prices have remained almost stationary throughout the week in the absence of any radical change in the statistical position here or fluctuation in cost at the South. Business has been of routine type and moderate all told.

### The Rabbeth Ventilating Door Bolt.

Ranson Hardware Company, Burlington, Vt., are offering the ventilating



The Rabbeth Ventilating Door Bolt.

Prices are rather weak but without positive change. Foreign Zincs are somewhat irregular in price, with German at as low as 5¢ for future delivery.

**Colors, &c.**—There is nothing in the general situation that contrasts with what was experienced a week ago. Business has been perfunctory, at all events, and barely up to the average for the season, while prices have undergone hardly any change. Bulk goods for grinders' use have been relatively better than other goods, since some orders were placed for round lots for autumn delivery, but the business

door bolt here shown. The bolt is designed to be used in place of chain bolts, and is especially adapted to sleeping rooms where more or less opening is desired for ventilation. It also enables the house owner or occupant of the room to better know what may be occurring in other parts of the house; aids in detecting fire or a burglar, and at the same is a protection against intruders. It is explained that the bolt does not mar the finish of the door and casings, and that by its use the door may be held rigidly open at any distance within the limits of the fastening.



### Bicycle Screw Plates.

Wiley & Russell Mfg. Company, Greenfield, Mass., are introducing screw plates, as shown in Fig. 1, put up in



Fig. 1.—Bicycle Screw Plates.

sets, composed of parts as represented in Figs. 2, 3 and 4. These are made of Birmingham (Stubs) wire gauge sizes,

12<sup>50</sup>, 12<sup>55</sup>, 13<sup>48</sup>, 13<sup>54</sup>, 13<sup>56</sup>, 14<sup>56</sup>, 15<sup>56</sup>, 15<sup>60</sup> and 16<sup>56</sup>. The 10-size set with 11<sup>56</sup>, 12<sup>40</sup>, 12<sup>42</sup>, 12<sup>50</sup>, 12<sup>55</sup>, 13<sup>48</sup>, 13<sup>56</sup>, 14<sup>56</sup>, 15<sup>56</sup> and 16<sup>56</sup>. The 5-size set with 12<sup>40</sup>, 12<sup>42</sup>, 12<sup>50</sup>, 13<sup>48</sup> and 13<sup>56</sup>. In this connection the company have issued a supplement to their catalogue describing a number of convenient assortments of taps and dies. It also gives a useful table showing the dimensions in thousandths of inches, also comparison with the screw gauge sizes and the sizes in fractional parts of an inch, making in all some 300 variations.

### Cutting Off Attachment.

The Oster Mfg. Company, Cleveland, Ohio, have added an attachment to their adjustable die stock, of which an

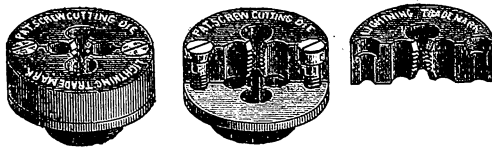


Fig. 2.—Dies.

including dies, taps and die holders of various styles. The manufacturers remark that the development of the bicycle and electrical trades has given rise

illustrated description appeared in *The Iron Age* of March 29, 1894. The attachment is referred to as a handy, practical and easy working cutting off

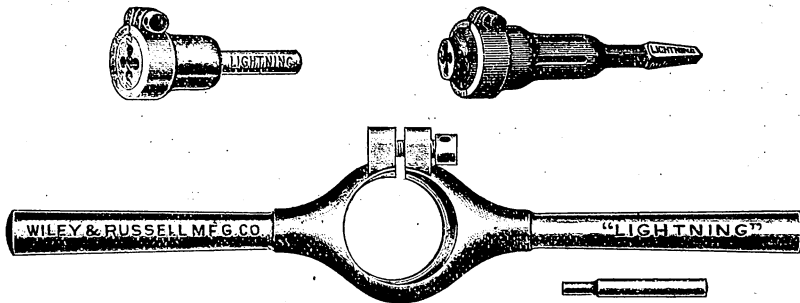


Fig. 3.—Die Holders.

to a considerable demand for these goods, which have never been regularly provided by makers of screw cutting tools, but have been treated as special work, resulting in considerable incon-

venience and dissatisfaction to manufacturers and repairers in these lines. The makers state that they have provided a full assortment of sizes in these plates, with the proper pitches of screw tool, which combined with the die stock makes a tool which it is safe to take to mining camps, on board of lake and ocean vessels, or to places out of the reach of repair shops or a kit of tools. The point is made that the die stock is of simple construction and that it can be operated without the use of a hammer, wrench or any other tool.

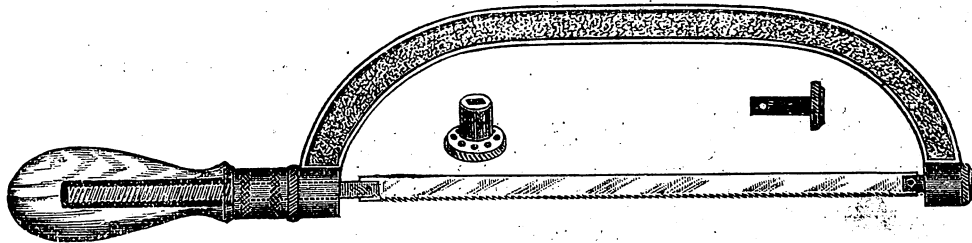


Fig. 4.—Tap.

venience and dissatisfaction to manufacturers and repairers in these lines. The makers state that they have provided a full assortment of sizes in these plates, with the proper pitches of screw

### The J. E. C. Hack Saw Frame.

The improved back saw frame here illustrated is offered by Samuel Babcock, Elmira, N. Y. It is made with a strong ribbed back and polished hardwood handle. The long square screw



The J. E. C. Hack Saw Frame.

thread to meet the usual demand. The goods are put up in three sets, 15, 10 and 5 size sets, Fig. 1 illustrating the 15-size set. These are usually made of the following wire gauge sizes: The 15-size set with 9<sup>38</sup>, 10<sup>38</sup>, 11<sup>40</sup>, 11<sup>56</sup>, 12<sup>40</sup>, 12<sup>42</sup>,

running into the handle permits the use of short or broken blades, as the screw can be run out to the length of 3 inches. The thumb screw on the other end of the frame is so arranged that the blade may be adjusted on any one of eight an-

gles. This feature is referred to as being very convenient for many purposes. The frames are furnished nicked, polished and japanned, in 9 and 12 inch sizes. The 9 inch frame will use blades from 6 to 9 inches in length, and the 12-inch size takes blades from 9 to 12 inches long.

### Ferris Burglar Alarm and Lock.

Ferris Mfg. Company, 26 *Evening Post* Building, Chicago, are offering an alarm and lock which may be conveniently carried when traveling, and applied to door or windows at night. It measures 3 1/4 inches in length and weighs 8 ounces. It is stated that if, when the alarm is in position, an attempt is made to open the door or window to which it is applied, a blank cartridge is exploded with a report loud enough to arouse the soundest sleeper. It is further explained that at the firing of the cartridge the device securely fastens the door or window, which cannot be opened until some one on the inside detaches the alarm or throws it out of position. The point is made that if the cartridge fails to explode, or if there is none in the machine, the result is the same—the door or window cannot be opened except from the inside.

### Sweepers in Vermilion Wood.

Vermilion wood, which is now being used by the Bissell Carpet Sweeper Company, Grand Rapids, Mich., is brought from East India by a six months' voyage of nearly 19,000 miles. It is referred to as a rich red wood, with a wealth of natural color and remarkable qualities of hardness and durability. The manufacturers state that they are using the wood not only as a unique attraction, but because of its weight and strength, as it insures more than other woods the constant heavy pressure of the wheels against the brush; and that cases made of it are so substantial that the vermilion wood sweepers have a special warrant accompanying them.

ATTENTION IS CALLED to the advertisement in this issue of Coleman's "Law of Mechanics' Liens" for the State of Illinois. It is published by the Wait Publishing Company, 216 to 220 Clark street, Chicago, and is referred to as authority by leading lawyers.

THE PACIFIC MAIL STEAMSHIP COMPANY have definitely decided to run their steamships "Newport," "City of Para" and "Columbia" to Colon, when they are released by the Columbian Line, this month. The Columbian

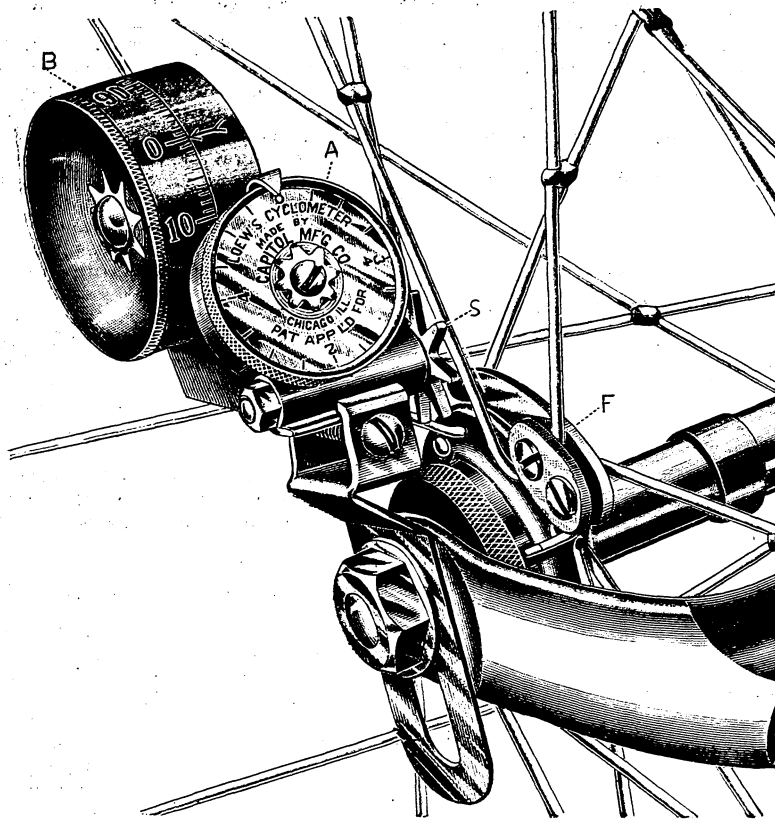
Line is to operate the old Brazil boats, "Alliance," "Finance" and "Advance," to Colon, and it is expected that strenuous competition will exist between the rival lines, resulting in a war of rates.

**Loew's 10,000-Mile Cyclometer.**

The illustration herewith given shows a new cyclometer which is now being manufactured by the Capitol Mfg. Company, 125 to 137 Rees street, Chicago. As shown in the cut, the cyclometer is

be instantaneously set to zero by simply turning them by hand, their adjustment in no way affecting the record made by the total mileage dial, which constantly adds the mileage made by the wheel. The construction is so simple that any one can take it apart and quickly put it

dies. The stated advantages of this arrangement are as follows: The time and trouble in fitting and changing dies and guides for each occasion is saved; each size of stock, die and guide is always together complete, ready for use, and several sizes of the same set may be in use at the same time. The manufacturers remark that the success of their full mounted Lightning screw plates for bolt dies led them to produce the set here illustrated.



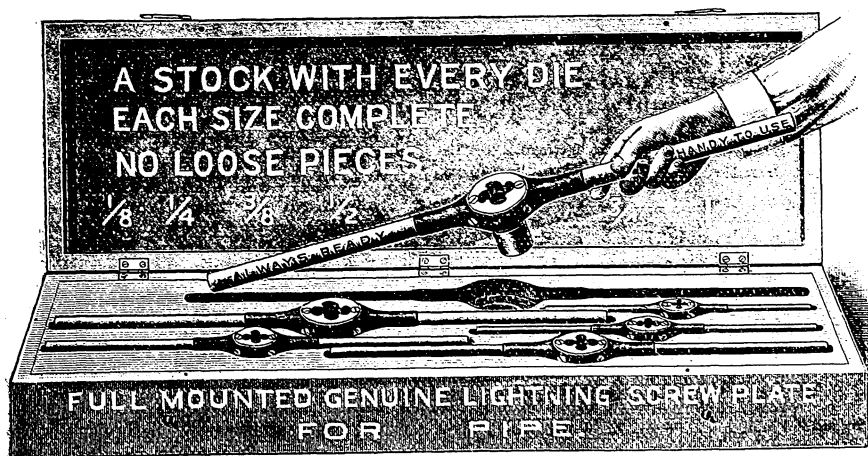
*Loew's 10,000-Mile Cyclometer.*

attached to a bicycle wheel, being secured in its position by the nut on the end of the axle. It is made in three sizes, for 26, 28 and 30 inch wheels. The weight is only 4 ounces, and it projects but  $\frac{1}{2}$  inch from the side of the fork. This cyclometer is so made that while it will record a total of 9900 miles and repeat, yet it has independent single trip and mile dials. The dial lettered B is the trip indicator, recording up to 100 miles and repeating. The

together, yet the manufacturers state that it is absolutely accurate and reliable. It can be easily read by the rider without dismounting, and is not affected by dust. The parts are all nickelled and run noiselessly. The price has been fixed at \$3 25.

**Stocks and Dies for Pipe.**

The accompanying cut represents a full mounted Lightning screw plate for



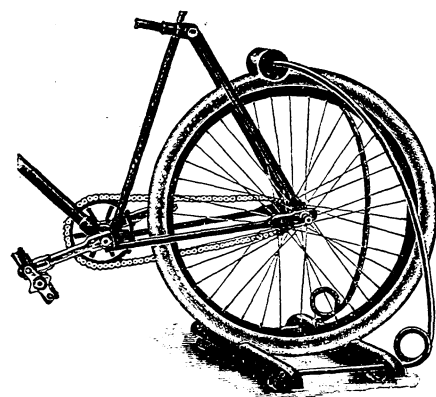
*Stocks and Dies for Pipe.*

dial lettered A indicates 1 mile and fractions thereof. The total mileage indicator is on the rear of dial B. This indicator can be set back to zero at the end of the season or at any intermediate time if desired. The A and B dials can

pipe for sizes of 1 inch and under, offered by Wiley & Russell Mfg. Company, Greenfield, Mass. Each die is furnished complete with its own stock of suitable size and weight, instead of but a single stock to a set of several

**The Bridgeport Bicycle Stand.**

Lyon & Grumman, Bridgeport, Conn., are putting on the market a bicycle stand, as here shown. The device consists of two cross bars of wood, which

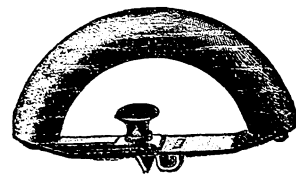


*The Bridgeport Bicycle Stand.*

may lie flat on the floor or be mounted on casters, through which run  $\frac{3}{4}$ -inch steel wire. This is coiled to form a spring and then carried up to the height of the bicycle wheel and across and down on the other side. The bottom of the wheel rests in grooves in the wood cross pieces and the top is held by a grooved spool through which the wire runs. This arrangement, it is stated, holds the bicycle upright and firm even when mounted, and permits easy movement of the machine either together with the stand or alone. The manufacturers claim that the stand is simple in construction, manufactured in the best manner and that it weighs but 4 pounds.

**Improved Sad Iron Handle.**

The Cleveland Wood Turning Company, 710 to 726 Scranton avenue, Cleveland, Ohio, are manufacturing an



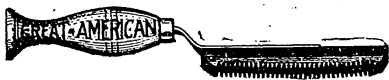
*Improved Sad Iron Handle.*

improved Mrs. Potts' sad iron handle. The improvement relates to the metallic part of the handle which is called the stretcher. This is now made of steel, nickel plated or tinned, instead of cast iron. It combines lightness and strength without the breakage attending the iron stretcher handles. The ends of the stretcher are turned up, as shown in the illustration herewith, for the same reason that the iron stretcher

has hollow lugs at each end—namely, to keep the screw heads as far as possible from the hot iron, and thus avoid unduly scorching or burning the wood. The wooden circles used in the manufacture of these handles are of exactly the same dimensions as used on the regularly made handles, but are only of hazel.

#### Great American Fish Scaler.

Covert's Saddlery Works, Farmer, N. Y., are offering a fish scaler, as shown herewith. The scaler is made of heavy

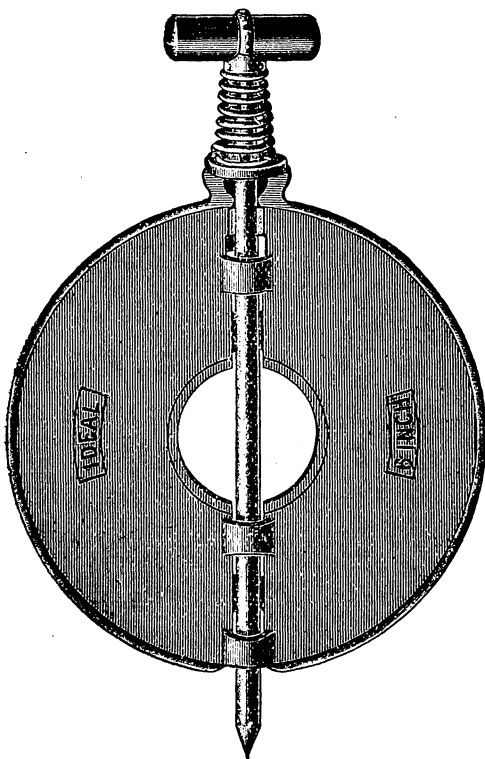


*Great American Fish Scaler.*

sheet steel, attached to a steel shank, and is nicely finished by being C-plated with a non-corrosive metal; it weighs about 3 ounces. The point is made that the rapidity and ease with which scales can be removed with the tool make it a very desirable device for the fish market and the family. Samples are sent by the makers by mail upon receipt of 15 cents.

#### The Ideal Damper.

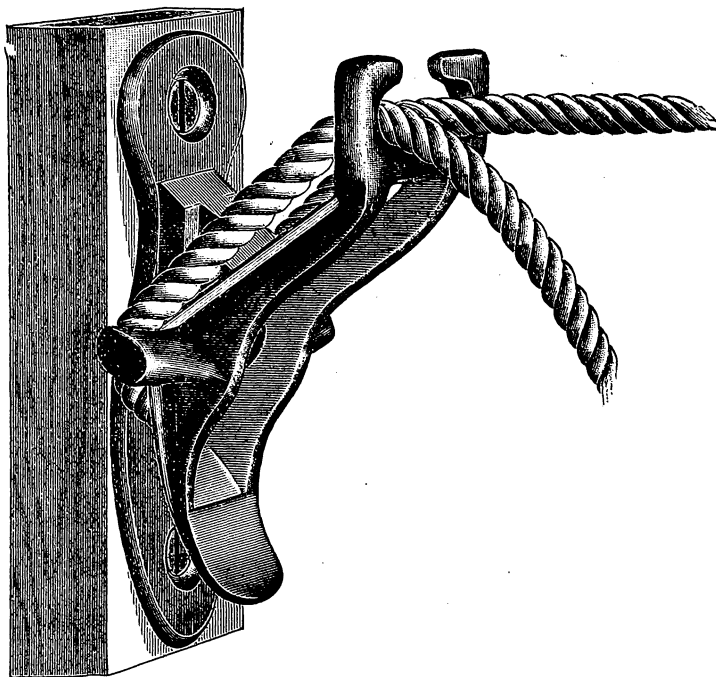
Stover Mfg. Company, Freeport, Ill., have just taken up the manufacture of dampers, and are introducing the one shown in the accompanying cut. It is explained that the spindle goes in straight, having proper guides, so that it cannot go wrong, and that with a



*Fig. 1.—The Ideal Damper.*

quarter turn it is in place; that the collar is secured to lugs on the spindle, so it cannot slide off when the spindle is taken from the blade, thus saving much annoyance, and that the wooden handle is securely held in place by means of a wire wrapped around the center in

a groove, one end of the wire being cast into the head of the spindle, thus becoming a part of it. The point is made that there is a small amount of metal about the handle, and that the handle is securely held and is kept cool. The makers claim that the spindle is sharp



*Lightning Clothes Line Fastener.*

pointed and makes its own hole; that the spring and collar are securely attached to the spindle; that no punch or tools are required to put it in place; that it requires but a quarter turn of

#### Lightning Clothes Line Fastener.

The accompanying cut represents a clothes line fastener introduced by the Standard Mfg. Company, Florence, Mass. Among the desirable points claimed for the fastener are the follow-

ing: That the line can be put up, taken down, tightened or slackened in a moment; that knots are obviated; that lines cannot slip; that cold or wet weather does not affect the fastener; that should a line break between two fasteners the remaining line or lines would in no way be disturbed, and that no clothes pole is required, as a pull on the line makes it tight and the fastener holds it. The fasteners are furnished japanned or galvanized, packed one dozen in a box, two gross in a case. The manufacturers will furnish a sample free, post-paid, and will quote prices upon application.

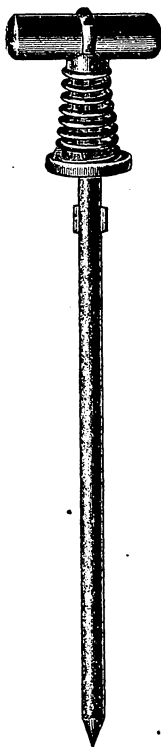
#### Improved Star Lawn Swing.

Specialty Mfg. Company, Titusville, Pa., have recently completed a new style of seat for their Star lawn swings, which, it is stated, entirely does away with any liability of children having their fingers or arms pinched, while it is so constructed that a child 10 or 12 years of age can operate it with the feet as well as the hands and with as little effort as would be required in rocking a chair. It is pointed out that a feature of the swing is the ease with which it is folded up. It can also, it is claimed, be taken down or set up without the removal of a single bolt or screw. The makers remark that the improvement will add to the cost of the swing, but that for this season at least future orders will be filled at former prices.

In view of the low rates they have had to accept lately for wheat and corn, many farmers have planted potatoes this season. The heavy sales of foreign grown potatoes last year show that there is room for a considerable expansion of this industry in the United States.

Great damage has been done to crops in Kansas by floods.

*Fig. 2.—Damper Spindle.*



# Current Hardware Prices.

JUNE 13, 1894.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

The character @ is used to indicate a range of price thus discount 50&100&50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

## Adjusters, Blind—

Domestic.....\$ dos \$3.00, 33¢@39¢&10¢  
Excoelior.....\$ dos \$10.00.....50¢&10¢&2¢  
North's.....\$ dos \$11.00.....50¢&10¢  
Zimmerman's—See Fasteners Blind.

## Ammunition—See Caps, Cartridges, Shells, &c.

## Anvils—

### American—

Eagle Anvils, \$ 10 9¢.....15¢@15¢5¢  
Horse shoe brand, Wrought.....11¢@11¢4¢  
Moore & Barnes Mfg. Co.....33¢@33¢

### Imported—

Armstrong Mouse Hole.....9¢@10¢  
S. & H., machine finished.....10¢@11¢  
Trenton.....9¢@10¢  
Wilkinson's.....10¢@10¢  
Peter Wright's.....10¢@11¢

## Anvil Vise and Drill—

Allen Anvil and Vise \$3.00.....40¢@10¢  
Cheney Anvil and Vise.....25¢  
Millers Falls Co., \$18.00.....20¢  
Star.....45¢@55¢

## Apple Parers—See Parers

### Apple, &c.

## Augers and Bits—

Boring Machine Augers.....70¢@70¢10¢  
Car Bits, 12-in. twist.....50¢  
Common Augers and Bits.....70¢@70¢10¢  
Cincinnati Bell-Hangers Bits.....30¢@10¢  
Forster Pat. Auger Bits.....15¢  
Jennings' Pattern Car Bits.....40¢  
Jennings' Pattern Auger Bits.....50¢  
A. E. Jennings & Co., No. 10, extension  
lip.....40¢  
C. E. Jennings & Co., No. 30.....60¢  
C. E. Jennings & Co., Auger Bits, set  
32½ quaters, No. 5, \$5; No. 30, \$3.50, 25¢  
Russell Jennings' Augers and Bits, 25¢@10¢  
Lewis' Patent Single Twist.....15¢@10¢  
L'Hommedieu Car Bits.....15¢@10¢  
Pugh's Black.....20¢  
Pugh's Jennings Pattern.....30¢  
Snell's Bits.....60¢@5¢@10¢

## Bit Stock Drills—

Cleveland.....50¢@10¢5¢  
Cincinnati, for wood.....50¢@10¢5¢  
Cincinnati, for metal.....45¢@10¢  
Morse Twist Drills.....50¢@10¢5¢  
New Process Twist Drill Co.....50¢@10¢5¢  
Standard.....50¢@10¢5¢  
Syracuse, for metal.....50¢@10¢  
Syracuse, for wood (wood list), 30¢@30¢5¢

## Expansive Bits—

Clark's small, \$18; large, \$26. 35¢@35¢10¢  
Ives' No. 4, \$ dos \$60.....40¢  
Steers' No. 1, \$28; No. 2, \$18.....35¢@40¢  
Stearns' No. 3, \$48.....20¢  
Swan's.....40¢

## Gimlet Bits—

Bee.....25¢@25¢10¢  
Common.....\$ gross \$2.50@2.50¢  
Diamond.....\$ dos \$1.25.....40¢@10¢  
Double Cut:  
Hartwell's.....\$ gro. \$10.00.....40¢@10¢  
Douglass'.....40¢@10¢50¢  
Ives'.....60¢@10¢60¢10¢5¢  
Shepardson's.....45¢@10¢45¢10¢5¢

## Hollow Augers—

Bonney's Adjustable, \$ dos \$48.....50¢  
Cincinnati Adjustable.....25¢@10¢  
Cincinnati Standard.....25¢@10¢  
Douglass'.....33¢@33¢10¢  
French, Swift & Co. (Beecher).....33¢@33¢10¢  
Ives'.....33¢@33¢10¢  
Ives' Expansive, each \$4.50.....50¢5¢  
Stearns'.....20¢@10¢  
Universal Expansive, each \$4.50.....20¢  
Wood's, \$ dos, \$48.....25¢@10¢

## Ship Augers and Bits—

L'Hommedieu's.....15¢@10¢15¢10¢5¢  
Snell's.....25¢@25¢10¢  
Snell's Ship Auger Pattern Car Bits.....15¢@10¢15¢10¢5¢  
Watrous'.....25¢@25¢10¢

## Awl Hafts—See Hafts, Awl.

## Awls—

Brad, Handled.....\$ gr. \$2.50@2.50¢  
Brad, Shouldered.....\$ gr. \$1.30@1.30¢  
Peg, Pat.....\$ gr. 35¢@35¢  
Peg, Should.....\$ gr. \$1.50@1.55¢  
Scratch, Handled.....\$ gr. \$4.00@4.00¢  
Scratch, Socket.....\$ dos \$1.10@1.20

## Awl and Tool Sets—See

### Sets, Awl and Tool.

## Axes—

First quality, best brands.....\$6.00@8.50¢  
First quality, other brands.....5.50¢@6.00¢  
Beveled add 50¢ @ doz.

## Axle Grease—See Grease,

### Axle.

## Axles—

o. 1 Common.....3¢@3¢4¢  
o. 2 Common.....4¢@4¢4¢  
Nos. 7 to 12.....70¢  
Nos. 15 to 28.....47¢  
Nos. 10 to 22.....70¢  
Concord Axles, loose collar.....4¢@1¢4¢  
Concord Axles, solid collar.....5¢@5¢4¢  
Tubular Axles.....50¢

## Bag Holders—See Holders,

### Bag.

## Balances—

Caldwell, low list.....30¢  
Pullman.....60¢

## Spring—

Spring Balances.....40¢@40¢10¢  
No. 2000 20 80  
Chatillon, \$ dos.....\$0.80 0.95 1.75 net  
Chatillon Straight Balances.....40¢@40¢10¢  
Chatillon Circular Balances.....50¢@10¢

## Barb Wire—See Wire, Barb.

## Bars—

Crow.....\$ 2¢@2¢3¢  
Cast Steel.....\$ 2¢@2¢3¢  
Iron, Steel Points.....\$ 2¢@2¢3¢

## Basins, Wash—

Standard Fiberglass, No. 1, 10½-in., \$1.50;  
12-inch, \$2.00; 18½-inch, \$2.50; 15-inch,  
\$3.00.

## Beams, Scale—

Scale Beams, List Jan. 12, '82.....60¢@10¢  
60¢@10¢5¢  
Chatillon's No. 1.....40¢  
Chatillon's No. 2.....50¢@10¢50¢10¢5¢  
Custer's.....33¢@33¢

## Beaters—

Egg—  
Bryant's.....\$ gross \$14.00  
Double (H. & R. Mfg. Co.), \$ gro. No. 0  
\$12.00; No. 1, \$15.00; No. 2.....\$36.00  
Dover.....\$ dos \$1.00@1.20  
Dover (Standard Co.).....\$ dos \$1.00  
Duplex (Standard Co.).....\$ dos \$1.00  
Duplex Extra Heavy (Standard Co.).....\$ dos \$1.50  
Easy (H. & R. Mfg. Co.).....\$ gro \$12.00  
Improved Acme (H. & R. Mfg. Co.).....\$ gro \$6.00  
Silver & Co.....\$ gro \$5.50  
Spiral.....\$ gro \$4.25 @ \$4.50  
Triple (H. & R. Mfg. Co.).....\$ gro \$16.50

## Culinary—

Keystone, P. D. & Co., Each, No. 1, \$1;  
No. 2, \$2.....20¢

## Bells—

Cow—  
Common Wrought.....60¢@10¢  
Kentucky Durham.....70¢@10¢  
Kentucky, Sargent's list.....70¢@10¢  
Kentucky, "Star".....70¢@10¢  
Texas Steel.....50¢@10¢50¢10¢5¢  
Western, Sargent's list.....70¢@10¢

## Door—

Crane, Brooks'.....50¢@10¢2¢  
Crane, Cone's.....10¢  
Crane, Cone's.....20¢@10¢  
Gong, Abbe's.....33¢@33¢10¢  
Gong, Barton's.....40¢@10¢50¢  
Gong, Yankee.....45¢@10¢  
Lever, R. & E. Mfg. Co.'s.....60¢@10¢50¢  
Lever, Sargent's.....60¢@10¢  
Lever, Taylor's Bronzed or Plated, net  
Lever, Taylor's Japanned.....25¢@10¢  
Pull, Brooks'.....50¢@10¢2¢

## Electric—

Bigelow & Dowse.....20¢@20¢10¢  
Wollensaks'.....20¢@20¢10¢

## Hand—

Extra Heavy Brass.....70¢  
Light Brass.....70¢@10¢70¢10¢5¢  
Silver Chime.....33¢@10¢  
White.....70¢  
Globe Cone's Patent.....25¢@10¢35¢

## Miscellaneous—

Call.....45¢@50¢  
Farm Bells.....\$ 2¢@2¢  
Steel Alloy Church and School Bells.....50¢

## Bellows—

Blacksmiths'.....60¢@10¢10¢70¢  
Hand Bellows.....40¢@10¢50¢  
Molders'.....40¢@10¢50¢

## Belting, Rubber—

Common Standard.....75¢@10¢75¢10¢5¢  
Extra.....60¢@10¢5¢70¢  
Standard.....70¢@10¢75¢  
N.Y.B. & P. Co., Carbon.....60¢@10¢5¢  
N.Y.B. & P. Co., Double Diamond.....60¢  
N.Y.B. & P. Co., 1846 Para.....40¢@10¢

## Bench Stops—See Stops, Bench

## Benders and Upsetters,

### Tire—

Detroit Perfect Tire Bender 15¢@15¢10¢  
Green River Tire Benders and Upsetters.....20¢  
Stoddard's Lightning Tire Upsetters.....15¢

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.,  
see Augers and Bits.

## Bit Holders—See Holders.

## Blind Adjusters—See Ad-

### justers, Blind.

## Blind Fasteners—See Fasten-

### ers, Blind.

## Blind Staples—See Staples,

### Blind.

## Blocks—

Cleveland Block Co., Mal. Iron.....50¢@10¢60¢10¢  
Moore's Novelty, Mal. Iron.....50¢@50¢5¢  
Moore's Grip Tackle Blocks, 25¢@25¢10¢  
See also Machines, Hoisting.

## Boils—

## Carriage, Machine, &c.—

Com. List June 10, '84.....80¢@10¢80¢10¢5¢  
Genuine Eagle, Norway, list Oct. '84.....80¢@10¢80¢10¢5¢  
Eagle, Norway, list Oct. '84.....80¢@10¢80¢10¢5¢  
R.B. & W., old list.....70¢  
Bolt Ends, list Jan. 1, 1890.....80¢@10¢80¢20¢  
Machine, list Jan. 1, 1890.....80¢@10¢80¢20¢

## Door and Shutter—

Cast Iron Barrel Square, &c.....65¢@10¢75¢10¢5¢  
Cast Iron Chain (Sargent's list).....65¢@10¢65¢10¢5¢  
Cast Iron Shutter Bolts, 75¢@10¢75¢10¢5¢  
Ives' Patent Door Bolts, 60¢@10¢60¢10¢10¢  
Wrought Barrel.....75¢@10¢80¢  
Wrt B. K. Flush Common.....60¢@10¢60¢10¢10¢  
Wrt Shutter, Brass Knob.....50¢@10¢50¢10¢0¢  
Wrt Shutter, Sargent's list.....60¢@10¢  
Wrt Shutter, all Iron, Stanley's.....66¢@70¢  
Wrought Square.....75¢@10¢30¢  
Wrt Sunk Flush, Sargent's list.....60¢@10¢  
Wrt Sunk Flush, Stanley's list, 80¢@60¢10¢

## Stove and Plow—

Flow.....60¢@10¢60¢10¢10¢  
Stove.....65¢@70¢  
R. B. & W., Plow.....55¢

## Tire—

Common, list Feb. 28, '83.....70¢@70¢10¢  
American Screw Company  
Norway, Phila., list Oct. 16, '84.....75¢  
Eagle, Phila., list Oct. 16, '84.....80¢  
Bay State, list Feb. 28, '83.....70¢  
Port Chester Bolt and Nut Company:  
Empire list Feb. 28, '83.....70¢  
Keystone, Philadel., list Oct. '84.....80¢  
Norway, Phila., list Oct. '84.....75¢  
R. B. & W., Philadel., list Oct. 16, '84.....80¢

## Borers, Tap—

Common and Ring.....20¢@10¢  
Clark's.....53¢@35¢  
Enterprises, Mfg. Co.....33¢@25¢  
Ives' Tap Borers.....33¢@25¢

## Boring Machines—See Ma-

### chines, Boring.

## Bow Pins—See Pins, Bow.

## Boxes, Letter—

Tatum's.....40

## Boxes, Wagon—

Per B.....24¢

## Boxes, Miter.

Spilker's Excoelior, 3 in., \$7.50, 4 in.  
\$8.50, 5 in., \$13.00, 6 in., \$15.00.....20¢

## Braces—

American Bit Brace and Tool Co.:  
Nos. 10, 12, 20.....60¢@10¢  
Nos. 11, 21, 24, 27.....70¢@10¢  
Nos. 22, 23, 25.....60¢@10¢5¢  
Nos. 13, 26, 30, 37.....70¢@10¢5¢  
Barker's Imp'd Platin.....75¢@10¢80¢  
Barker's Imp. Nickeled.....65¢@10¢70¢  
Ratchet.....75¢@10¢80¢  
Eclipse Ratchet.....60¢  
Globe Jawed.....40¢@40¢10¢  
Corner Brace.....40¢@40¢10¢  
Universal, 3 in., \$2.10; 10 in., \$2.25  
Buffalo Ball.....\$1.10@1.15  
Barber's.....50¢@10¢  
Bartholomew's.....50¢@5¢  
Armstrong's.....\$1.00@1.10  
Davis Patent.....50¢@10¢  
Fray's Nos. 70 to 120, 81 to 123, 207 to 414  
50¢@10¢5¢  
Ives' New Haven Novelty.....70¢@70¢5¢  
New Haven Ratchet.....60¢@50¢10¢  
Barber Ratchet.....60¢@50¢10¢  
Sargford.....60¢@50¢10¢  
P. S. & W. Co., Peck's Patent.....60¢  
Rose & Johnson.....50¢  
Saxton's.....75¢@10¢80¢  
Barker's Imp. Nickeled.....65¢@10¢70¢  
Ratchet, Nickeled.....40¢@10¢50¢  
Buffalo Ball.....net, \$1.10@1.15

## Brackets—

Shelf, fancy.....70¢@70¢10¢  
Sargent's list.....70¢@70¢10¢  
Other makes at a wide range of prices.  
Shelf, plain.....65¢@70¢  
Sargent's list.....60¢@10¢70¢10¢  
Bradley Shelf Brackets.....70¢@10¢

## Bright Wire Goods—See

### Wire.

Henls' Self-Inch.....9 10 9x11  
Basting, } Per doz.....\$4.50 5.50 6.50  
Morgan Odorless.....\$ dos \$12.50  
New Haven.....50¢  
Queen City.....33¢@33¢  
Wire Goods Co.....65¢@10¢

## Buckets, Well and Fire—

See Pails, Galvanized.

## Bull Rings—See Rings, Bull.

## Butcher's Cleavers—See

### Cleavers, Butchers.

## Butts—

Cast Brass, Fast.....33¢@10¢  
Cast Brass, Loose Joint.....33¢@10¢  
Cast Brass, Tiebout's.....50¢  
Wrought Brass.....80¢@10¢80¢20¢

## Cast Iron—

Fast Joint, Broad.....60¢@80¢5¢  
Fast Joint, Narrow.....60¢@10¢5¢

## Loose Joint.....

Loose Joint, Japanned.....75¢@10¢  
Loose Joint, Jap. with Acorns.....80¢  
Loose Pin, Acorns.....  
Loose Pin, Acorns, Japanned.....  
Loose Pin, Acorns, Japanned,  
Plated Tips.....  
Mayer's Hinges.....  
Parliament Butts.....

## Wrought Steel—

Fast Joint, Broad.....  
Fast Joint, Narrow.....  
Fast Joint, L. Narrow.....  
Inside Blind, Light.....  
Inside Blind, Regular.....  
Loose Joint, Broad.....  
Loose Pin.....  
Table Butts, Back Flaps, &c.....  
Bronzed Wrought Butts, 50¢@10¢50¢10¢5¢

## Cages, Bird—

Hendryx Brass:  
3000, 5000, 1100 series.....10¢  
1200 series.....40¢  
200, 300, 600 and 900 series.....40¢@10¢50¢  
Hendryx Bronze:  
700, 800 series.....40¢@10¢50¢  
Hendryx Enameled.....40¢@10¢50¢

## Calipers—See Compasses.

## Calks Toe

Burke's, One Prong, Blunt.....4¢@5¢  
Burke's, One Prong, Sharp.....5¢@6¢  
Burke's, Two Prong, Blunt.....5¢@6¢  
Burke's, Two Prong, Sharp.....6¢@7¢  
Gautier, One Prong, Blunt.....5¢@6¢

## CanOpeners—See Openers, Can.

## Cans Milk—

S. & Co.: 5-gal., \$3.00; 3-gal., \$4.40;  
10-gal., \$4.75 each.....40¢@10¢

## Cans Oil

Galvanized Blue Band, 1 gal., \$ dos \$2.38  
Galvanized Blue Band, 5 gal., Tip Top  
\$ dos \$12.00  
Galvanized Blue Band, 5 gal., Faucet,  
\$ dos \$3.00  
Glass Oil, Friend.....\$ dos \$3.75

## Caps—Percussion—

Hicks & Goldmark's and Union Metallic  
Cartridge Co.....\$ 100¢  
Eley's B. B. Waterproof, Cent. Fire.....50¢@50¢  
Eley's D. W. Waterproof, Cent. Fire.....\$1.60  
E. B. Grand Edge, Cent. Fire, 1-10's.....47¢@50¢  
E. B. Trimmed Edge, 1-10's.....47¢@50¢  
F. L. Waterproof, 1-10's.....35¢@37¢  
G. D.....27¢@30¢  
Musket, Waterproof, 1-10's.....50¢@50¢  
S. B. Genuine Imported.....45¢

## Primers—

Berdan Primers.....\$1.00.....3¢  
B. L. Caps (Sturtevant Shells) \$1.00.....3¢  
All other Primers, \$1.20.....3¢

## Cards—

Watson's Cotton, Wool, Horse and  
File, list January 28, 1891.....25¢

## Carpet Stretchers—

### See Stretchers, Carpet.

## Cartridges—

B. B. Caps, Con. Ball, Swgd., \$1.85@1.90  
B. B. Caps, Round Ball, \$1.90@1.95  
Blank Cartridges, except 22 and 32 cal.,  
additional 10¢ to above discounts  
Blank Cartridges, 22 cal., \$1.75.....2¢  
Blank Cartridges, 32 cal., \$3.50.....3¢  
Cent. Fire, Military and Sporting 15¢@25¢  
Cent. Fire, Pistol and Rifle.....25¢@25¢  
Primed Shells and Bullets.....15¢@25¢  
Rim Fire Cartridges.....50¢@50¢  
Rim Fire Military.....15¢@35¢

## Carpet Sweepers—

### See Sweepers, Carpet.

## Casters—

Bed.....Brass.....55¢@55¢10¢  
Plate.....Others.....60¢@60¢10¢  
Shallow Socket.....40¢@10¢  
Deep Socket.....40¢@10¢  
Giant Truck Casters.....45¢@50¢  
Gwinner's Common Senses.....45¢@50¢  
Gwinner's Hercules.....45¢@50¢  
Martin's Patent (Phoenix).....45¢@10¢60¢10¢  
Payson's Anti-Friction.....70¢@70¢10¢  
Payson's Truck.....60¢@60¢10¢  
Socket Truck Casters.....60¢@60¢10¢  
Stationary Truck Casters.....60¢@10¢  
Tucker's Patent, low list.....45¢  
Yale Casters, low list.....70¢

## Cattle Leaders—

### See Leaders, Cattle.



### Chalk Lines—See Lines.

### Checks, Door—

Bardsley's.....20%  
Unity.....50%

### Chisels—

Socket Framing and Firmer  
Mix.....

Ohio Tool Co.....75&10&80%  
F. S. & W.....  
Wetherby.....  
Buck Bros.....30%  
Charles Buck.....30%  
Douglass.....75&75&10%  
Merrill.....60&10&10&10&5%  
L. & J. White.....30&30&5%  
Tanged and Miscellaneous.....

Buck Bros.....30%  
Charles Buck.....30%  
Butcher's.....475&55&10%  
Spear & Jackson's.....50 to 2  
Tanged Firmers.....50&50&10%  
L. & J. White, Tanged.....25&5%  
Cold Chisels, fair quality, # 14 to 16%  
**Chucks—**

Beach Pat.....each, \$3.00, 20%  
Danbury.....each, \$3.00, 30&30&5%  
Graham Patent.....33%  
Morris's Adjustable, each, \$7.00, 20&20&5%  
Syracuse, Bais Pat.....25%  
Skinner Patent Chucks.....

Combination Lathe Chucks.....40%  
Drill Chucks.....25%  
Independent Lathe Chucks.....40%  
Planer Chucks.....20%  
Universal Lathe Chucks.....40%  
Union Mfg. Co.....

Combination.....40%  
Independent.....40%  
Universal.....40%  
Victor.....\$5.50, 25%  
**Churns—**

Modernmaid Star Barrel Churn, each  
6 gal., \$2.60; 10 gal., \$2.75; 15 gal.,  
\$3.00; 20 gal., \$3.25.  
Tiffin Union, each, 5 gal. \$3.25; 7 gal.,  
\$3.75; 10 gal., \$4.25.  
**Clamps—**

Adjustable, Cincinnati.....15&10%  
Adjustable, Hammers.....15&10&5%  
Adjustable, Stearns's.....30&30&10%  
Barnes' Machinists' Clamps.....33%  
Cabinet, Sargent's.....70&10%  
Carpenter's, Cincinnati.....25&10%  
Carriage Makers', P. S. & W. Co., 40&10%  
Carriage Makers', Sargent's.....75&75&5%  
Eberhard Mfg. Co.....40&50&10%  
Joiners' Clamps, Patum's.....25&10%  
R. I. Tool Co.'s Wrought Iron.....25%  
Saw Clamps, see Vices, Saw Filers  
Stearns's Malleable, with Wrought Iron  
Screw.....75&75&5%  
Warner's.....40&10&40&10&5%  
**Cleavers, Butchers'—**

Beatty's.....40&50&10%  
Bradley's.....25&30%  
Foster Bros.....30%  
New Haven Edge Tool Co.'s.....40%  
Nichols Bros.....30%  
P. S. & W.....35&45&35&10%  
Schulte, Lohoff & Co.....40&40&5%  
L. & J. White.....25%  
**Clips—**

Baker Axle Clips.....25%  
Norway Axle.....65&10&5%  
Norway Spring Bar Clips.....65&5&5%  
2d grade Norway Axle.....70%  
Steel Felloe Clips.....# 1, 4%  
Superior Axle Clips.....70%  
Wrought Iron Felloe Clips.....# 1, 5%  
**Cloth and Netting, Wire—**  
See Wire, &c.

### Cockeyes—

See Bars.

### Coffee Mills—See Mills, Coffee.

### Collars Dog—

Brass, Pope & Stevens's list.....40%  
Chapman Mfg. Company, new list.....40%  
Embossed, Gilt, Pope & Stevens's list 30&10%  
Leather, Pope & Stevens's list.....40%  
Medford Fancy.....40&10&5%  
**Comb Curry—**

American Curry Comb Co.....33%  
Fitch's.....60&10&50&10&10%  
Gibb's Magnetic.....# doz., \$2.00  
Kohler's Humane.....# doz., \$1.75  
Kohler's Magic Oscillating.....# doz., \$2.00  
Rubber, per doz., \$1.00.....25%  
**Compasses, Dividers &c.—**  
See Compasses, Dividers, &c.

Compass, Callipers, Dividers, 70&10&75%  
Bemis & Call Co's.....

Dividers.....65%  
Callipers, Call's Patent Inside.....65%  
Callipers, Double.....65%  
Callipers, Inside or Outside.....65%  
Callipers, Wing.....80%  
Compasses.....60&5%  
Excelsior.....50%  
Starrett's.....

Combination Dividers.....25%  
Lock Callipers and Dividers.....25%  
Spring Callipers and Dividers.....25&10%  
Stevens & Co.'s.....25&10%  
**Coolers, Water—**

S. B. & Co., 2-gal., \$3.40; 5-gal., \$4.00;  
4-gal., \$4.50; 6-gal., \$5.60 each.....60%  
**Coopers' Tools—**  
See Tools, Coopers'.

### Cord—

Braded, Crown Drab and Fancy, #  
1, 55%  
Braded, Crown White, # 1, 50%  
Cable Laid Italian Sash.....# 1, 10&20%  
Common.....# 1, 8&9%  
Common Russia.....# 1, 12%  
Egyptian, India Hemp, Braded.....# 1, 12%  
India Cable Laid Sash.....# 1, 11&12%  
Massachusetts, White.....# 1, 12&14%  
Ossawaun Mills.....

Braded, Giant, Drab and Fancy, #  
1, 55%  
Braded, Giant, White, # 1, 30%  
Braded, Italian Hemp.....# 1, 40%  
Braded, Linen.....# 1, 50%  
Braded, White Cotton.....# 1, 57%  
Semper Idem, Braded, White.....25%  
Silver Lake.....

A quality, Drab, 55%  
A quality, White, 50%  
B quality, Drab, 35%  
B quality, White, 30%  
C quality, White, 25%  
Cleveland, Extra Braded, Drab.....39%  
Cleveland, Extra Braded, White.....34%  
Cleveland, Solid Braded.....  
Economy, Drab.....# 1, 27%  
Economy, White.....# 1, 25%

Hercules, Drab.....# 1, 80%  
Hercules, White.....# 1, 25%  
White Cotton Braded, fair.....# 1, 25&25%  
**Wire Picture—**

Braded or Twisted.....80&50&30&15%  
**Corkscrews—See Screws, Cork.**

### Corn Knives and Cutters—

See Knives, Corn.

### Crackers, Nut—

Acme.....

Japanned, # gro., \$30.....50%  
Nickel Plated, # gro., \$30.....10%  
Table (H. & B. Mfg. Co.).....25&10%  
Turner & Seymour Mfg. Co.....50%  
**Cradles—**

Grain.....50&20&50&5&2&3%  
**Crayons—**

White Crayons, # gross.....60&60%  
Cases, 100 gr., \$3.75 to \$4.25, at factory.  
D. M. Steward Mfg. Co., 3  
Metal Workers', # gross, \$2.50, 20 to 25%  
Railroad, # gross, 2.00, 20 to 25%  
Rolling Mill, # gross, 2.50, 20 to 25%  
Soapstone Pencils, # gross, 1.50, 20 to 25%  
See also Chalk.

### Creamery Pails—See Pails, Creamery.

### Crow Bars—See Bars, Crow.

### Curry Combs—

See Combs, Curry.

### Cutters—

Meat—

American.....# 2, 80%  
Each.....# 5, 7, 19, 25, 50, 80  
Enterprise.....# 10, 12, 22, 32, 43  
Nos.....# 3, 2.50, 4, 8, 15  
Dixon's, # doz.....40&40&5%  
Nos.....# 1, 2, 14.00, 17.00, 19.00, 30.00  
Draw Cut, each:  
Nos. 5, 2, 6, 8.....20&25%  
Hale's, # doz.....70%  
Nos.....# 11, 12, 13, 15  
Home No. 1, # doz.....\$27.00, \$35.00, \$55.00  
Little Giant, # doz.....\$28.00, \$45.00, \$55.00  
Nos. 305, 310, 312, 320, 322  
\$35.00, \$48.00, \$44.00, \$72.00, \$88.00  
Miles' Challenge, # doz.....\$45.00, \$55.00, \$70.00  
Nos.....# 1, 2, 3  
Triumph No. 505, # doz.....\$22.00, \$30.00, \$40.00  
Woodruff's, # doz.....\$21.00, \$25.00, \$30.00  
Nos.....# 100, 150  
Chadborn's Smoked Beef Cutter, # doz.....\$66.00  
Enterprise Beef Shavers.....20%  
**Slaw and Kraut—**

Tucker & Dorey Mfg. Co.:  
Kraut Cutters, # doz.....40%  
Slaw Cutters, 1 Knife, # gross.....\$21.00  
Slaw Cutters, 2 Knife, # gross.....30.00  
**Tobacco—**

Acme.....# doz., \$20.00, 40%  
All Iron.....# doz., \$4.25  
Champion.....# doz., \$20.00, 30%  
Nashua Lock Co.'s.....# doz., \$18.00, 50&5%  
National.....# doz., \$21.00, 30%  
Sargent's.....# doz., \$24.00, 55&10%  
**Washer—**

Appleton's.....# doz., \$16.00, 60&10%  
Bonney's.....# doz., \$30.00, 10%  
Cincinnati.....# doz., \$25.00, 10%  
Johnson's.....# doz., \$11.00, 35%  
Fenny's, # doz., # 1 Jar, \$1.50, 55%  
Smith's Pat.....# doz., \$12.00, 20&10&10%  
**Diggers, Post Hole, &c.—**

Cronk's Post Bars, # doz.....\$60.00,  
50&50&50&10%  
Eureka Diggers.....# doz., \$10.50, \$12.00  
Fletcher Post Hole Augers, # doz.....\$36.00,  
20&20&10%  
Gem, Improved, # doz.....\$9.00, \$10.00, \$11.00  
Gibbs' Columbia.....# doz., \$12.00  
Gibbs' Hustler.....# doz., \$10.00  
Gibbs' Imperial.....# doz., \$7.50  
Gibbs' National.....# doz., \$12.00  
Gibb's Post Hole Digger.....# doz., \$12.75  
Kohler's Hercules.....# doz., \$14.00  
Kohler's Invincible.....# doz., \$12.00  
Kohler's Little Giant.....# doz., \$18.00  
Kohler's New Champion.....# doz., \$8.00  
Ryan's.....# doz., \$20.00, 10%  
Samson, # doz., \$34.00.....25&25&10%  
Schneider.....# doz., \$18.00  
Shimer's Hollow Handle.....# doz., \$24.00  
Vaughan's Post Hole Auger, # doz.....\$5.50, \$9.50  
**Dividers—See Compasses.**

### Dog Collars—See Collars, Dog.

### Door Checks—

See Checks, Door.

### Door Springs—

See Springs, Door.

### Drawers, Money—

Money Drawers, # doz.....\$13&20%  
Waddell's Improved, No. 1, # doz.....\$15.00  
Waddell's Improved No. 2, # doz.....\$18.00  
Waddell's Comb, Cutlery Case and  
Alarm Till.....\$12.50  
**Drawing Knives—**  
See Knives, Drawing.

### Drills and Drill Stocks—

Automatic Boring Tools.....\$1.75 to \$1.85  
Bench Drills, Stearns's.....each \$1.75  
Blacksmiths' Self-Feeding, each \$7.50, 20%  
Breast, Bartholomew's.....each \$2.50  
Breast, Millers Falls.....each \$3.00, 25%  
Breast, P. S. & W.....40&10%  
Breast, Wilson's.....30&5%  
Chicopee Automatic Drill.....20&10%  
Goodell Automatic Drills.....40&50&10%  
Ratchet, Curtis & Curtis.....30%  
Ratchet, Ingersoll's.....25%  
Ratchet, Merrill's.....20&20&5%  
Ratchet, Moore's Triple Action.....25&30%  
Ratchet, Parker's.....20&20%  
Ratchet, Weston's.....20&25%  
Ratchet, Whitney's.....20&10%  
Whitney's Hand Drill, Plain, \$11.00,  
Adjustable, \$12.00.....20&10%  
**Twist Drills—**

Cleveland.....50&10&10%  
Diamond, W. & B.....60&10&10%  
Graham's Pat. Groove Shank.....60&10&10%  
Heller's Horse Raps.....50&10%  
New Process.....60&10&10%  
Standard.....60&10&10%  
Syracuse (Metal list).....50&10%

### Drill Bits or Bit Stock

Drills—See Augers and Bits.

### Drill Chucks—See Chucks.

### Dripping Pans—

See Pans, Dripping.

### Drivers, Screw—

Allard's Spiral, new list.....25%  
Brace Screw Drivers.....25&10%  
Buck Bros.....30%  
Buck Bros' Screw Driver Bits.....27&25%  
Clark's Pat.....33%  
Cincinnati.....25&10%  
Champion.....25&10%  
Dixson's.....50%  
Douglass Mfg. Co.....30&20&10%  
Ellrich's Socket and Ratchet.....25&25&10%  
Fray's Hol. H'dle Sets.....No. 3, \$12.00, 45%  
Gay & Parsons.....35%  
Goodell's Automatic.....50&10&5%  
Knapp & Cowles.....

No. 1.....70&10%  
No. 2.....70&10%  
No. 3.....60&10%  
Nos. 4 and 00, Acme and Ideal.....60&10%  
Kolb's Common Sense.....# doz., \$6.00, 25&10%  
Mayhew's Black Handle.....50%  
Mayhew's Monarch.....45&10%  
P. S. & W.....70%  
Sargent & Co's.....

No. 1, Forged Blade.....60&10&10%  
No. 2, 40 and 60.....60&10&10%  
Screw Driver Bits, Parr's, # gross, \$6.25  
Screw Driver Bits.....# doz., \$50&75%  
Stanley R. & L. Co.'s.....

No. 64, Varnished Handles.....65&10%  
No. 86.....70&10%  
Stearns's.....25&10&5%  
Stearns's Screw-Drive Bits.....80&30&5%  
C. T. Williamson Wire Novelty Co.....50%  
**Egg Beaters—See Beaters, Egg**

### Egg Poachers—

See Poachers, Egg.

### Electric Bell Sets—

See Bells, Electric.

### Emery—No. 4 to No. 54 to Flour, OF

48 gr. 150 gr. 3 F.F.F.  
Kegs, # D.....4 1/2 5 3  
1/2 kegs, # D.....4 1/2 5 3  
1/4 kegs, # D.....5 5 3 1/2  
10-cans, 10.....6 6 1/2 5 1/2  
in case.....6 6 1/2 5 1/2  
10-cans, less than 10.....10 10 8

### Enameled and Tinned Ware—See Ware, Hollow.

### Escutcheon Pins—

See Pins, Escutcheon.

### Escutcheons—

Brass Thread.....60&60&10%  
Door Lock.....Same dis. as Door Locks.  
Wood.....25%  
**Expanded Metal—**  
List No. 5.  
Door Mats, Galvanized.....25%  
Fencing, Painted Sheets.....30%  
Lathing.....10%  
Netting, Painted Sheets.....30%  
Tree Guards, Panoled.....15%  
Window Guards, Panoled.....15%  
**Extractors, Lemon Juice—**  
See Squeezers, Lemon.

### Fasteners, Blind—

Austin & Eddy, # gr. sets.....\$5.50  
Mackrell's, # doz., \$1.00.....20&20&10%  
Security Gravity.....# gr., \$7.50  
Van Sand's Old Pat., \$15 # gr.....55&10%  
Van Sand's Screw Pat., \$15 # gr.....60&10%  
Zimmerman's.....60&10%  
**Faucets—**  
B. & L. B. Co.  
West's Lock, Open and Shut Key.....50%  
Burnside's Red Cedar, bbl. lot.....50%  
Burnside's Red Cedar, bbl. lot.....50%  
Cork Lined.....70&50&70&10%  
Fenn's.....40%  
Fenn's Cork Stops.....33%  
Fraser's Pat. Petroleum.....60%  
Metallic Key, Leather Lined.....60&10%  
National Measuring, # doz., \$36.00, 25&10%  
John Sommers.....

Peerless Best Block Tin Key.....40%  
IXL, 1st quality, Cork Lined.....50%  
Diamond Lock.....40%  
Perfection Fla. Red Cedar (in boxes) 40%  
Perfection Fla. Red Cedar (in boxes) 40%  
Reliable Cork Lined.....50%  
O. K. Western Pattern Cork Lined.....50%  
No Brand, Red Cedar (in bbls.).....60&10%  
Western Pattern Metal Key.....40%  
No Brand Metal Key.....60%  
Self Measuring.....

Enterprise, # doz., \$36.00.....25&10%  
Lane's # doz., \$36.00.....25&10%  
Star.....60%  
Star, Metal Plug, new list.....40%  
Lockport, Metal Plug, reduced list.....60%  
**Felice Plates—**  
See Plates, Felice.

### Fibre Ware—See Ware, Fibre.

### Fifth Wheels—

Brewster.....50&5%  
Derby and Cincinnati.....45&5%  
**Files—**

### Domestic—

American.....70&70&10%  
Brookline.....60&10&10%  
G. & H. Barnett (Black Diamond).....60&10&10%  
Eagle.....60&10&10%  
Nicholson Files, Raps, &c. 60&10&10%  
Nicholson (X. F.) Files.....70%  
Nicholson's Royal File (Second).....25%  
(extra prices on certain.....75%  
Other makers, best brands.....70&50&70&10%  
Fair brands.....75&75&5%  
Second quality.....80&80&10%  
Arcade Horse Raps.....60&10&50&10&5%  
Chelsea Horse Raps, Hand Cut.....60&10%  
Heller's Horse Raps.....60&10%  
McCaffrey's Horse Raps.....50&10%  
Trojan Horse Raps.....60&10&5%  
**Imported—**  
Butcher.....Butcher's list, 20%  
Stuba.....Stuba's list, 25&30%

### Fixtures Grindstone—

Moore's.....55%  
P. S. & W. Co.....60&10%  
Reading Hardware Co.....80&10%  
Sargent's Patent.....70&10%  
**Fluting Machines—**  
See Machines, Fluting.

### Fodder Squeezers—

See Squeezers, Fodder.

### Forks—

Hay, Manure, &c. Asso. List, 70&70&50%  
Hay, Manure, &c. Phila. List, 60&60&10&5%  
Plated, see Spoons.

### Frames—

Saw—

Red, Polished and Varnished.....# doz., \$1.50, 25%  
White Vermont.....# gro., \$9.00, \$10.00  
**Screen, Window and Door—**

Bonanza Window Screens.....50&10%  
Cortland.....40&40&5%  
Empire Fancy Screen Doors, # doz., \$12  
Phillips' Window Screen Frames.....50&10&50&10&5%  
Porter's Pat. Window and Door Frame.....35&10%  
Stearns' Frames and Corners.....25&25&10%  
Wabash Adjustable Window Screen.....40&5%  
Warner's Screen Corner Irons.....33&4&10%

### Freezers, Ice Cream—

American.....60%  
Artic.....70%  
Blizard.....70%  
Boss and Pet.....60&10&10&10%  
Buffalo Champion.....55%  
Confectioners' Machine.....50%  
Crown.....60%  
Double Action Crown.....60%  
Giant.....55%  
Good Luck.....65%  
Granite State.....65%  
Keystone, P. D. & Co., each, \$1.50, 20%  
Model.....60%  
Ohio.....60&10%  
Peoples.....60&10%  
Shepard's Lightning.....65%  
Standard.....60%  
Standard Double Action.....60%  
Star.....60%  
White Mountain.....60%  
Zero.....70%  
**Fruit and Jelly Preserves—**  
See Preserves, Fruit and Jelly.

### Fruit Pickers—

See Pickers, Fruit.

### Fry Pans—See Pans, Fry.

### Gardens—

Gardens' Perfection, Standard and  
Globe; 7 1/2, 1 gro., 10; 2 to 5 gro.,  
20; 5 to 10 gro., 15; 6 to 12  
doz., 20; over 12 doz., 25%  
**Furnaces, Soldering—**

Burgess Nos. 3, 4 and 5 Gem, Copper  
reservoir.....\$3.50  
Burgess Nos. 3, 4 and 5 Gem tin reser-  
voir.....\$7.00  
Clayton & Lambert No. 1 Fire-Pot,  
\$6.00; No. 2 Fire-Pot.....\$12.00  
**Fuse—**Dis. 10&2% cash. # 1000 ft.  
Common Cotton Fuse, for dry gr'nd.....\$3.00  
Common Hemp Fuse, for dryground, 2.80  
Double Taped Fuse, for very wet gr'nd. 4.50  
Single Taped Fuse, for wet ground, 4.75  
Triple Taped Fuse, for very wet gr. 6.40  
Large Gutta Percha Fuse, for water, 15.00  
Small Gutta Percha Fuse, for water, 10.00  
**Gates Molasses—**  
Boss, # doz.:  
No. 1, \$7; No. 2, \$8; No. 3, \$9; No. 4,  
\$10.....60&10&10&10%  
Lincoln's Pattern.....70&70&10%  
Stebbin's Genuine.....60&10&10%  
Stebbin's Pattern.....80&10&40&10&5%  
Stebbin's Tinned Ends.....40&10%  
Weed's.....20&10%  
**Gauges—**  
Barrett's Comb, Roller Gauge.....# doz \$7.50 to \$8.00  
Hoague & Peck's Champion Gauge.....  
With Scale.....# doz., \$5.00  
Without Scale.....# doz., \$4.00  
Marking, Mortise &c.....60&10%  
Stanley R. & L. Co.'s Butt and Rabbit  
Gauge.....25&10%  
Starrett's Surface, Center and Scurth  
Gauge.....25&10%  
Wire, Brown & Sharpe's.....10&20%  
Wire, Morse's.....25%  
Wire, P. S. & W. Co.....10&10%  
Wire, Wheeler, Madden & Co.....10%  
**Gimlets—**  
Nail and Spike.....60&60&5%  
Diamond Gimlets.....# gr \$4.50  
Eureka Gimlets.....60&10&60&10&5%  
Double Cut, Douglass'.....40&10&5%  
Double Cut, Ives &c.....60&10&60&10&5%  
Double Cut, Shepardson's.....45&10&45&10&5%

### Glue—

Dodd's Liquid Glue.....25&25&5%  
Improved Process.....25&25&5%  
Le Page's Liquid.....25&25&5%  
Upton's Liquid.....35%  
**Glue Pots—See Pots, Glue.**

### Grease, Axle—

Axle Grease, 10 lbs.....# gross \$12.00  
Dixon's Everlasting.....10-lb pails, ea. 85%  
Dixon's Everlasting, in bxs., # doz 1 lb  
\$1.20; 2 lb \$2.00  
English Coach, 5-lb tin pails, # doz, \$3.50  
English Coach, wooden boxes.....# gross \$5.50  
Fraser's, kegs, half bbls, or bbl, # 3/4 doz, \$3.40  
Fraser's, tubs.....# 1/2 doz, \$4.00  
Fraser's, small wood boxes.....# gro. \$9.50  
Fraser's 5 lb wood boxes.....per doz, \$3.25  
Lower grades, special brands.....

Tiger, 5-lb tin pails.....# gr \$5.00 to \$7.00  
Tiger, wooden boxes.....# gross \$7.00  
**Grindstones—**  
Family, regular list





**Plate.**  
Romer's Night Latches.....45¢  
R. & T. Mfg. Co., list Mar. 30, 1889.....15¢  
Sargent & Co., list Apr. 1, 1894.....60¢  
Warner's Burglar Proof, # doz. \$3.00, 50¢  
Yale.....net prices

**Elevator—**

Moore's.....83¢

**Padlocks—**

**Wrought Iron Padlocks:**  
Brittain, Graham & Mathes, list Jan. 1, 1894.....75¢  
Mallory, Wheeler Co., list Jan. 1, 1894.....75¢  
Norwich Lock Mfg. Co., list June 10, 1891.....50¢  
Russell & Erwin Mfg. Co., list June 10, 1891.....50¢  
Sargent & Co., list January 1, 1894.....75¢  
William Wilcox Mfg. Co., list January 1, 1894.....75¢  
Ames Sword Co. up to No. 103 incl. 50¢  
Ames Sword Co. above No. 103.....50¢  
Barnes Mfg. Co. 40¢ to 10¢  
Champion Padlocks.....40¢  
A. E. Deltz.....40¢  
Eagle.....40¢  
Eureka, Eagle Lock Co.....40¢  
E. T. Fraim's Keystone Scandinavian.....40¢  
1010 line.....90¢  
120 line.....90¢  
109 line.....85¢  
510 line.....70¢  
225, 610 and 209 lines.....70¢  
All other numbers.....50¢  
Horsehoes.....# doz \$9.50 to 50¢  
Hotchkiss.....# doz \$9.50 to 50¢  
Nock's Nos. 0 to 91.....30¢  
Romer's Scandinavian, & Co., Nos. 100 to 505.....15¢  
Scandinavian.....90¢  
Slaymaker, Barry & Co. No. 1010 line.....90¢  
No. 41 line.....50¢  
No. 61 line.....50¢  
No. 21 line.....70¢  
No. 109 line.....90¢  
Star.....60¢  
Yale Lock Mfg. Co.'s.....net prices

**Sash, &c.—**

Attwell Mfg. Co.....25¢  
Champion Safety 1893.....70¢  
Clark's No. 1, 10; No. 2, 8 gr.....35¢  
Common Sense, Jap'd, Cop'd and Br'ed.....gr \$4.00  
Common Sense, Nickel Plated.....gr \$10.00

Corbin's Dalsey, list Feb. 15, 1886.....gr \$10.00  
Davis Brown, Barnes Mfg. Co.....35¢  
Ferguson's.....35¢  
Fish (Liesche's pat.), No. 100, gr.....35¢  
No. 105, gr.....50¢  
Giant, list Jan. 1892.....70¢  
Hammond's Window Springs.....40¢  
Hugin's New Sash Locks.....25¢  
Hugin's Sash Balances.....25¢  
Ives' Patent.....60¢  
Kempshall's Gravity.....60¢  
Kempshall's Model.....60¢  
Monarch.....50¢  
Payson's Perfect.....60¢  
Reading.....60¢  
Security.....70¢  
Universal.....30¢  
Victor.....60¢  
Walker's.....10¢  
Walcott's.....60¢

**Lumber Tools—**

See Tools, Lumber.

**Lustro—**

Four-ounce bottles.....# doz. \$1.75; # gross.....\$17.00

**Machines.**

**Boring—**

Without Augers. Upright. Angular.  
Boss, Carpenters' 3.60  
Boss, Ship Bldrs' 3.35  
Douglas.....\$5.50 \$6.75.....50¢  
Jennings'.....5.60 6.75.....50¢  
Millers Falls.....7.50.....25¢  
Phillips' Patent with Auger.....7.00 7.50.....25¢  
Snell's, Rice's Pat 5.50 6.75.....40¢

**Fluting—**

American, 5 in., \$3.00; 6 in., \$3.40; 7 in., \$4.50 each.....35¢  
Combined Fluter and Sad Iron.....# doz \$15.00.....30¢  
Crown, 4 1/2 in., \$3.50; 6 in., \$4.00; 8 in., \$6.50 each.....35¢  
Crown Hand Fluter, No. 1, \$15.00; 2, \$12.50; 3, \$10.00; 4, \$8.25.....30¢  
Crown Jewel, 6 in., \$8.50 each.....35¢  
Domestic Fluter.....each, \$1.50  
Eagle, 6 1/2-inch Rolls, \$2.15.....35¢  
Eagle, 6 1/2-inch Rolls, \$2.85.....35¢  
Knox, 6 1/2-inch Rolls.....\$3.25 each 35¢  
Knox, 6-inch Rolls.....\$3.60 each 35¢

**Holisting—**

Moore's Anti-Friction Differential Pulley Block.....20¢  
Moore's Hand Holist, with Lock Brake.....20¢  
Moore's Rope Differential Pulley Block.....60¢  
Maris & Beckley (Teal Patent).....30¢  
See also Blocks.

**Washing—**

Fair and Square.....# doz \$42.00  
Anthony Wayne, # doz. No. 1, #2; No. 3, #3; No. 3, #4.....# doz \$38.00  
Wayne American.....# doz \$54.00  
Weissel.....# doz \$54.00  
Western Star # doz. No. 2, #3; No. 3, #4.....# doz \$54.00

**Mallets—**

B. & L. Block Co., Hickory & L. V. 30¢ to 10¢  
Fibre Head, Stearns.....33¢  
Hickory.....20¢ to 10¢  
Lignumvitae.....20¢ to 10¢

**Mattocks—**

Regular list, 60¢ to 10¢  
Measures—  
Standard Fibreware, No. 1, peak # dozen, \$3.50; # peck, \$3.00

**Meat Cutters—**

See Cutters, Meat.

**Menders—**

Harness.....# doz., \$1.75  
Hudson's Hose Menders, in set, # doz., \$3.00  
Hudson's Hose Bands.....# gr., \$1.25

**Milk Cans—**

See Cans, Milk.

**Mills—**

**Coffee—**  
Box and Side, list Jan. 1, 1888, 60¢ to 10¢  
Net prices are often made which are lower than above discount.  
American, Enterprise Mfg. Co., list Jan. 17, 1893.....20¢  
National list, Jan. 1, 1894.....30¢  
Swift, Lane Bros.....30¢  
Wadell's New Box Mills, Ideal Brand, New List.....60¢ to 10¢

**Mining Knives—**

See Knives, Mining.

**Mosses Gates—**

See Gates, Mosses.

**Money Drawers—**

See Drawers, Money.

**Mowers, Lawn—**

Highest 10 in. 12 in. 14 in.  
grade, \$4.00 to \$5.25 \$4.50 to \$6.00 \$5.00 to \$6.75  
God.....\$3.00 \$3.25 \$3.50  
Cheap.....2.25 2.50 2.75

**Muzzles—**

Safety.....# doz., \$5.00, 25¢

**Nails—**

Cut and Wire. See Trade Report.

W. N. Nails, E. Pered. Association list, May 1, '92.....85¢ to 10¢

Hungarian, Finishing, Upholsterers', &c. See Tacks.

**Horse—**

No. 6 7 8 9 10  
A. C.....25¢ 23¢ 21¢ 21¢ 21¢  
American.....9¢ 9¢ 9¢ 9¢ 9¢  
Anchor.....23¢ 21¢ 20¢ 18¢ 18¢  
Ausable.....23¢ 21¢ 20¢ 18¢ 18¢  
Capewell.....19¢ 18¢ 17¢ 16¢ 16¢  
O. B. K.....25¢ 23¢ 22¢ 21¢ 21¢  
Champion.....25¢ 23¢ 22¢ 21¢ 20¢  
Champlain.....23¢ 21¢ 20¢ 18¢ 18¢  
Clinton, Fin.....19¢ 17¢ 16¢ 15¢ 14¢  
Empire Bronzed.....11¢ to 14¢  
Essex.....23¢ 21¢ 20¢ 18¢ 18¢  
Lyra.....9¢ 9¢ 9¢ 9¢ 9¢  
Maud S.....25¢ 23¢ 22¢ 21¢ 21¢  
Northwest'n.....25¢ 23¢ 22¢ 21¢ 20¢  
Putnam.....23¢ 21¢ 20¢ 19¢ 18¢  
Snowden.....9¢ 9¢ 9¢ 9¢ 9¢  
Standard.....23¢ 21¢ 20¢ 18¢ 18¢  
Vulcan.....23¢ 21¢ 20¢ 19¢ 18¢  
Western.....23¢ 21¢ 20¢ 19¢ 18¢

**Picture—**

Brass Head, Combination list.....50¢ to 10¢  
Brass Head, Sargent's list.....60¢ to 10¢  
Porcelain Head, Combination list.....40¢ to 10¢  
Porcelain Head, Sargent's list.....50¢ to 10¢  
Niles' Pat.....40¢  
Nail Pullers—See Pullers, Nail.

**Nail Sets—**

See Sets, Nail.

**Nippers, See Pliers and Nippers**

**Nut Crackers—**

See Crackers, Nut.

**Nuts—**

List Dec. 18, 1889. Square. Hex.  
Cold Punched.....5.00¢ 6.10¢ off list  
Hot Pressed.....5.80¢ 6.50¢ off list  
In packages of 100 lb, add 1-10¢ # lb, net; in packages less than 100 lb, add 1/4¢ # lb, net.

**Oakum—**

Best or Government.....# lb 6¢ to 6 1/2¢  
Navy.....# lb 4¢ to 4 1/2¢  
U. S. Navy.....# lb 5¢ to 5 1/2¢

**Oil Tanks—**

See Tanks, Oil.

**Oilers—**

Brass and Copper.....50¢ to 10¢  
Zinc and Tin.....70¢ to 10¢  
Broughton's Brass.....50¢  
Broughton's Zinc.....60¢  
Malleable, Hammers' Improved, No. 1, \$3.80; No. 2, \$4.00; No. 3, \$4.40 # doz. 10¢  
Malleable, Hammers' Old Pattern, same list.....50¢  
Olmstead's Brass and Copper.....50¢  
Olmstead's Tin and Zinc.....60¢  
Prior's Pat. or "Paragon" Brass.....60¢  
Prior's Pat. or "Paragon" Zinc.....70¢  
Steel, Draper & Williams.....60¢  
Winst. & Hobbs Mfg. Co., Steel Anti-Rust.....60¢

**Openers, Can—**

American.....# gross \$1.75 to \$2.00  
Champion, # doz \$2.00.....45¢  
Domestic, # doz \$2.00.....45¢  
Duplex.....# doz 25¢, 15¢ to 20¢  
Eureka.....# doz \$2.50, 10¢  
Excelsior, No. 1 \$2.50; No. 2, \$1.50.....40¢  
French, No. 4.....# doz \$2.25, 55¢ to 60¢  
Iron Handle, No. 5.....# gr \$6.00, 45¢ to 50¢  
Lyman's.....# doz \$3.75, 20¢  
Messenger's Comet.....# doz \$3.00, 25¢  
Moore's.....# doz \$2.75 to \$3.00  
Sardine Scissors.....# doz \$2.75 to \$3.00  
Sprague, No. 1, 55¢; 2, 60¢; 3, 65¢.....# doz \$2.75  
Universal, # doz \$3.00.....55¢ to 60¢  
World's Best # gross, No. 1, \$12.00; No. 2, \$24.00; No. 3, \$36.00.....50¢ to 10¢

**Packing, Steam—**

**Rubber—**

Standard, fair quality.....70¢ to 10¢  
Inferior quality.....75¢ to 10¢  
Extra.....60¢ to 5¢ to 10¢  
Jenkins' Standard, # lb 80¢.....25¢ to 5¢  
N. Y. B. & P. Co., Double Diamond.....60¢  
N. Y. B. & P. Co., Salamander.....45¢  
N. Y. B. & P. Co., Carbon.....70¢ to 5¢

**Miscellaneous**

American Packing.....9¢ to 10¢  
Cotton Packing.....14¢ to 15¢  
Italian Packing.....13¢ to 14¢  
Jute.....6¢ to 7¢  
Russia Packing.....13¢ to 14¢

**Pails—**

S. S. & Co.: 18-qt., \$7.00; 20-qt., \$7.25

**Creamery—**

# doz. \$5.00

**Galvanized Pails—**

Light. Heavy.  
10 Quart.....\$2.00 to \$2.25 \$2.25 to \$2.50  
12 Quart.....2.25 to 2.50 2.50 to 2.75  
14 Quart.....2.50 to 2.75 2.75 to 3.00

**Galvanized Buckets—**

Fire. Well.  
10 Quart.....\$2.50 to \$2.75  
12 Quart.....2.75 to 3.00 \$2.25 to \$2.50  
14 Quart.....3.00 to 3.25 2.50 to 2.75

**Indurated Fiber Ware**

Fire Pails, deep.....# doz \$4.80  
Fire Pails, round bottom.....# doz \$5.40  
Milk, 14 qt.....# doz \$5.40  
Stable, 14 qt.....# doz \$6.00  
Star Pails, 12 qt.....# doz \$4.20

**Standard Fiber Ware—**

Buggy Pails.....# doz \$2.50  
Chamber Pails, 14 qt.....6.00 \$7.00  
Dairy Pails, 14 qt, # doz. 3.75 4.25  
Fire Pails, No. 1, 12 qt, # doz. 3.75 4.25  
Fire Pails, No. 2, 14 qt, # doz. 4.25 4.75  
Horse Pails.....4.00 4.50  
Slop Jar (bal. trap).....7.50 8.50  
Sugar Pails.....5.00 5.50  
Water Pails, 12 qt, # doz. 3.15 3.75

**Pans—**

**Dripping—**

Large sizes.....# lb 5¢  
Small sizes.....# lb 6 1/2¢  
Silver & Co. (Covered).....40¢

**Fry—**

Standard List:  
No. .... 1 2 3 4  
# doz. \$3.00 \$3.75 \$4.25 4.75 \$5.25  
No. .... 5 6 7 8  
# doz. \$6.00 \$7.00 \$8.00 \$9.00  
Polished, regular goods.....75¢ to 10¢  
Acme Fry Pans.....60¢ to 65¢

**Dust—**

Steel Edge, No. 1.....# doz \$1.75

**Roasting and Baking—**

Columbian, S. S. & Co.: No. 10, \$2; 20, \$2.25; 30, \$2.50 each.....60¢ to 10¢

**Paper and Cloth—**

Sand and Emery—  
List April 19, 1888.....50¢ to 10¢ to 60¢  
Sibley's Emery and Crocus Cloth.....30¢

**Parers—**

**Apple—**

Advance.....# doz \$4.25  
Baldwin.....# doz 4.75  
Bonanza.....each 5.00  
Daisy.....# doz 3.50  
Dandy.....each 7.50  
Eclipse.....# doz 4.00  
Eureka, 1892.....each 16.00  
Family Bay State.....# doz 12.00  
Favorite.....# doz 5.00  
Gold Medal.....# doz 4.00  
Ideal.....# doz 4.00  
Improved Bay State.....# doz 27.00 to 30.00  
Little Star.....# doz 4.00  
March.....# doz 13.50  
New Lightning.....# doz 4.00  
Orion.....# doz 4.00  
Penn.....# doz 3.00  
Perfection.....# doz 4.00  
Reading 72.....# doz 3.75  
Reading 78.....# doz 6.75  
Rocking Table.....# doz 5.50  
Turn Table.....# doz 13.50  
Victor.....# doz 4.00  
Waverly.....# doz 4.00  
White Mountain.....# doz 4.00

**Potato—**

Antrim Combination.....# doz \$5.50  
Saragosa.....# doz \$5.50  
White Mountain.....# doz \$4.50

**Pencils, Soapstone—**

See Crayons.

**Pickers, Fruit—**

Prize Fruit Pickers.....50¢

**Picks—**

Railroad or Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00.....60¢ to 10¢ to 70¢

**Picture Nails—**

See Nails, Picture.

**Pinking Irons—**

See Irons, Pinking.

**Pins—**

**Bow—**

Humason, Beckley & Co.'s.....60¢ to 10¢  
Pick, Stow & W. Co.'s.....50¢ to 10¢ to 60¢  
Sargent & Co.'s, #17 and #18.....60¢ to 10¢

**Escutcheon—**

Brass.....70¢  
Iron, list Nov. 11, 1888.....75¢

**Pipe, Wrought Iron—**

List April 13, 1893.  
1 1/2 and under, Plain.....67¢ to 10¢ to 10¢  
1 1/2 and under, Galv.....60¢ to 10¢ to 10¢  
1 1/2 and over, Plain.....67¢ to 10¢ to 10¢  
1 1/2 and over, Galv.....67¢ to 10¢ to 10¢  
Boiler Tubes, list Oct. 24, 1892.....65¢ to 10¢ to 10¢  
Casing, list Nov. 16, 1892, 52¢ to 10¢ to 10¢  
Cold Drawn Seamless Steel Tubing.....50¢  
Inserted Joints Casing, list Nov. 18, 1892.....47¢ to 10¢ to 10¢  
Steel Boiler Tubes.....27¢ to 10¢ to 10¢

**Planes and Plane Irons—**

**Wood Planes—**

Molding.....50¢ to 10¢  
Bench, First quality.....55¢ to 10¢  
Bench, Second quality.....60¢ to 10¢  
Bailey's (Stanley R. & L. Co.).....50¢ to 10¢  
Iron Planes—  
Bailey's (Stanley R. & L. Co.).....50¢ to 10¢  
Birmingham Plane Co. 60¢ to 10¢ to 10¢  
Chaplin's Iron Planes.....50¢ to 10¢ to 10¢  
Davis' Iron Planes.....50¢ to 10¢ to 10¢  
Davis' Tool Co.'s Self-Sewing.....35¢  
Miscellaneous Planes (Stanley R. & L. Co.).....25¢ to 10¢  
Sargent's.....6¢ to 10¢ to 10¢  
Standard Tool Co.....60¢ to 10¢ to 10¢  
Steers' Iron Planes.....50¢ to 10¢ to 10¢

**Plane Irons—**

Auburn Thistle.....30¢ to 10¢ to 10¢  
Buck Bros.....30¢  
Butcher's.....\$5.00 to \$6.25 to 5¢  
Ohio.....30¢ to 10¢ to 10¢  
Sandusky.....30¢ to 10¢ to 10¢  
Stanley R. & L. Co.....50¢ to 10¢  
L. & J. J. White.....25¢

**Plates—**

Fellow.....# lb 6¢ to 10¢

**Pliers and Nippers—**

Button's Patent.....60¢  
Carew's Pat. Wire Cutters.....20¢  
Cronk's 5 in., \$15.00; 10 in.....\$2.00  
Cronk's Button Pattern.....60¢ to 10¢  
Cronk's Carrier Pliers.....60¢ to 10¢  
Eureka Pliers and Nippers.....40¢  
Gas Pliers.....60¢  
Gas Pliers, Oustar's Nickel Plated.....60¢  
Hall's No. 2, 5 in., \$15.50; No. 4, 7 in., \$21.00 # doz. 40¢ to 10¢  
Humason & Beckley Mfg. Co. 50¢ to 10¢  
Lindsay's Giant, No. 55, 5 in., # doz., \$5.00.....35¢  
Morrill's Parallel, # doz. \$12.00.....30¢ to 50¢  
P. S. & W. Cast Steel.....50¢ to 50¢  
P. S. & W. Timmers' Cutting Nippers.....10¢  
Russell's Parallel.....25¢

**Plumbs and Levels—**

Regular list.....75¢ to 10¢ to 30¢  
Cook's.....40¢ to 10¢  
Davis Inclinoimeters.....10¢ to 10¢  
Davis Iron Levels.....30¢  
Daston's.....70¢ to 10¢ to 10¢  
Pocket Levels.....70¢ to 10¢ to 10¢  
Stanley's Duplex.....20¢ to 10¢  
Stanley's Handy.....20¢ to 10¢

**Poachers, Egg—**

Buffalo Steam Egg Poachers, # doz. No. 1, \$5.00; No. 2, \$9.00.....83¢  
Silver & Co., 6-Ring, # doz. \$4.00; 3-Ring.....\$2.00

**Pokes Animal—**

Bishop's American.....# doz \$3.00  
Bishop's I. X. L.....# doz \$3.00  
Bishop's Steel Monarch.....# doz \$5.00  
Bishop's Ohio.....# doz \$6.00  
Bishop's Pioneer.....# doz \$3.75  
Bolding.....# doz \$5.00  
Buckeye Single Stale.....# doz \$2.50  
Columbian, Double Stale.....# doz \$5.00  
Eagle, Double Stale.....# doz \$5.00  
Eagle, Single Stale.....# doz \$3.25  
Metallic Horse Fork.....# doz \$5.00

**Police Goods—**

Daley's Improved Handcuffs, 2 Hands, Polished # doz. \$48.00; Nicked \$57.00; 3 hands, Polished, # doz \$72.00; Nicked, \$84.00.....25¢  
J. P. Lovell's Police Goods.....25¢  
Newhall Ship Chandlery Co. Handcuffs, \$15.00 # doz.....25¢  
Towers.....25¢

**Polish—**

**Metal—**

Gaston's Silver Compound.....33¢ to 45¢  
Prestoline.....80¢  
Prestoline Paste.....33¢ to 45¢  
Tanite Mills:  
Paste, 4 lb tins.....# gr., \$14.40 25¢  
Paste, 1 lb tins.....# gr., \$33.00 25¢  
Liquid, 1 lb tin.....# gr., \$33.00 25¢  
Powder, 1 lb.....# gr., \$30.00 25¢  
Wynn's White Silk, 10 lb cans # doz. \$1.57

**Stove—**

Black Eagle Benzine Paste, 5 and 10 lb cans.....12¢ to 10¢  
Black Flag. Bottles.....# gr \$7.20, 10¢  
Black Flag, 5 and 10 lb pails.....# lb 8¢  
Black Jack Water Paste, 5 and 10 lb cans.....12¢ to 10¢  
Bonnell's Liquid Stove Polish, # gr \$9.00  
Bonnell's Paste Stove Polish, # gr \$6.00  
Boynton's Noon Day.....# gr \$13.00  
Crown Paste.....# gr \$7.20  
Crown Paste in 5 and 10 lb pails, # lb 12¢  
Diamond O. K. Enamel.....# gr \$19.00  
Diamond Rock Nickel Clean.....# gr \$10.20  
Joseph Dixon's.....# gr \$3.00, 10¢  
Dixon's Plumbago.....# lb 8¢  
Fireline.....# gr \$3.50  
Gem.....# gr \$4.50, 10¢  
Gold Medal.....# gr \$3.00, 25¢  
Japanese.....# gr \$3.50  
Jet Black.....# gr \$3.50  
Lustro.....# gr \$4.75  
Nickel Plate Paste.....# gr \$6.00  
Parlor Pride Stove Enamel, # gr, Raven Liquid, 8 oz. bottles.....# gr \$3.00

Raven Liquid, 8 oz. bottles.....# gr \$3.00

Raven Paste in 5 lb. pails (cases of 6 pails), # lb 10¢

Raven Water Polish, large boxes.....# gr \$7.20

Rising Sun.....# gr \$5.50 to \$5.75

Ruby.....

**Pullers Nail-**

Polypoe..... 24.00, 40%  
 Economy..... 25.00, 40%  
 Giant, No. 1..... 28.00, 40%  
 Giant, No. 2..... 30.00, 40%  
 Pelican..... 32.00, 40%  
 Seranton..... 34.00, 40%

**Pulleys-**

Brass Screw..... 70%  
 Hay Fork, "Anti-Friction," 5 in. solid..... 50%  
 Hay Fork, "F" Common and Patent..... 50%  
 Hay Fork, Moore's Anti-Friction 5 in. Wheel..... 40%  
 Hay Fork, Reed's Self-Lubricating..... 40%  
 Hay Fork, Solid Eye, 24.00; Swivel..... 40%  
 Hay Fork, Stearns' Nos. 35 & 45..... 60%  
 Hay Fork, Stearns' Nos. 15, 25, 35, 45..... 60%  
 Hay Fork, Tarbox Patent..... 20%  
 Hot House, Awning, &c..... 60%  
 Japanned Clothes Line..... 60%  
 Japanned Screw..... 70%  
 Japanned Side..... 70%  
 Moore's Ceiling or End, Anti-Friction..... 40%  
 Moore's Dumb Bell, Anti-Friction..... 40%  
 Moore's Electric Light..... 80%  
 Moore's Side, Anti-Friction..... 60%  
 Sash (Auger Mortise)..... 60%  
 Common Sense..... 60%  
 Empire..... 60%  
 Acme..... 60%  
 Ideal, Nos. 2, 4, 10 & 15..... 60%  
 Ideal, or IXL No. 60..... 22% net.  
 On bbl. lots extra 5%.

**Pumps-**

Oliver, Best Makers..... 60%  
 Pitcher Spout, Best Makers..... 70%  
 Pitcher Spout, Cheaper G'ds..... 75%  
 Myers' Pumps, low list..... 50%

**Punches-**

Avery's Revolving..... 40%  
 Avery's Saw and Punch..... 40%  
 Bemis & Call Co.'s Cast Steel Drive..... 50%  
 Bemis & Call Co.'s Check..... 50%  
 Bemis & Call Co.'s Spring..... 50%  
 Bemis & Call Co.'s Springfield Socket..... 50%  
 Niagara Hollow Punches..... 20%  
 Niagara Solid Punches..... 50%  
 Rice Hand Punches..... 15%  
 Redder's or Drive..... 40%  
 Spring, good quality..... 25%  
 Spring, Leach's Pat..... 15%  
 Solid Timmers, P. S. & W. Co., No. 1..... 15%  
 Timmers' Hollow Punches, P. S. & W. Co..... 20%

**Rail-**

Barn Door, Light, In..... 1.75 2 1/2 2 7/8  
 Per 100 feet..... 1.75 2 1/2 2 7/8  
 B. D. for N. E. Hangers.....

Per 100 feet..... Small, Med. Large.  
 Carrier, double braced, Steel Rail, 3 ft. foot..... 3 1/2  
 Lundy Parlor Door, Planed Edge, 7 ft. 7 1/2  
 Moody Steel Rail 3 ft. 6..... 45%  
 Moore's Steel Rail..... 35%  
 Sliding Door, Bronzed W. & Iron, 7 ft. 35%  
 Sliding Door, Painted, 7 ft. 35%  
 Sliding Door, W. & Iron, 7 ft. 35%  
 Terry's Steel Rail..... 35%  
 Victor Track Rail, 7 ft. 35%

**Rakes-**

Cast Steel, Association G'ds..... 70%  
 Cast Steel, outside g'ds..... 70%  
 Malleable, good..... 70%  
 Fort Madison, Prime Bow Brace and Peerless..... 65%  
 Fort Madison Steel Tooth Lawn Rake..... 60%  
 Gibbs..... 25%  
 Gibbs' Acme, Lawn Rake..... 40%  
 Gibbs' Canton Lawn Rake..... 40%  
 Gibbs' Crown Lawn Rake, No. 1..... 40%  
 Gibbs' Favorite Lawn Rake..... 40%  
 Gibbs' Hustler No. 0..... 40%  
 Gibbs' Hustler No. 1..... 40%  
 Oneida Lawn Rake..... 40%

**Razors-**

Campbell Cutlery Co..... 50%  
 Electric Cutlery Co..... Net prices  
 Galvanic..... Net prices  
 Jordan's AAAI, new list..... Net prices  
 Jordan's Old Faithful, new list..... Net prices  
 J. R. Torrey Razor Co..... Net prices  
 Wootenholme and Butcher, \$10 to 25..... 10%

**Razor Strops-**

See strops, Razor.

**Reels-**

Clothes Line..... 33%  
 Stearns'..... 10%

**Fishing-**

Hendryx Aluminum, German Silver, Gold, Bronze, Silver Rubber, Popolo and Salmon, Single Action, Multiplying and Quadruple, all sizes..... 25%  
 Hendryx Single Action Series, 102P and PN, 202P and PN, 102PR and PRN, 202PR and PRN, 504P and PN, 00304P and PN, 602 and 602N, 802 and 802N, 02084N, Competitor..... 50%  
 Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2004N, 2004P and PN, 00204PN, 0024 and 0024N, 5000N and PN..... 40%  
 Registers..... 70%  
 Moore's Bronze Finishes..... 70%  
 Moore's Electroplated..... 75%  
 Moore's Japanned..... 75%  
 Moore's Solid Bronze..... 85%  
 Moore's Stove Pipe..... 33%

**Rings and Rings-**

Bull Rings.....

Elrich Hd. Co., White Metal, low list..... 50%  
 Hotchkiss' low list..... 30%  
 Humason, Beckley & Co.'s..... 70%  
 Peck, Stow & W. Co.'s..... 50%  
 Sargent's..... 75%  
 Union Nut Co..... 65%

**Hog Rings and Rings-**

Note.-The market on Hog Rings and Rings is in a demoralized condition and prices are low and irregular. We therefore withdraw quotations for the present.

**Rivets and Burrs-**

Copper..... 60%  
 Coppered Iron, Betina Brand..... 50%  
 Iron Norway, list Nov. 17 '87..... 60%  
 Second Quality..... 70%

**Rivet Sets-See Sets.****Roasting and Baking Pans-See Pans, Roasting and Baking.****Rods-**

Stair, Black Walnut..... 25%  
 Stair, Brass..... 25%

**Rollers-**

Acme Moore's Anti-Friction..... 55%  
 Barn Door, Sargent's list..... 60%  
 Moore's Barn Door Stay..... 60%  
 Union Barn Door Roller..... 70%  
 Thompson Mfg. Co.'s Lawn Rollers..... 70%

**Rope-The following prices are for b.**

New York or factory, and are shaded 1/4% on large lots; terms, 1 1/2% for cash.

Manila, 7-16 in. diam. and larger..... 7 1/4 @ 7 1/4  
 Manila, 1/4 and 5-16 in. diam..... 8 1/4 @ 8 1/4  
 Manila, Tarred Rope..... 7 @ 7 1/4  
 Manila, Hay Rope, Med'm..... 7 1/4 @ 7 1/4  
 Sisal, 7-16 in. and larger..... 6 1/4 @ 6 1/4  
 Sisal, 1/4 and 5-16 in. diam..... 6 @ 6 1/4  
 Sisal, Tarred Rope..... 6 1/4 @ 6 1/4  
 Sisal, Hay Rope..... 6 @ 6 1/4  
 Sisal, Medium Lath Yarn..... 5 @ 5 1/4  
 New Zealand..... 7-16 in. and larger..... 5 1/4 @ 5 1/4  
 New Zealand, 1/4 inch..... 6 @ 6 1/4  
 New Zealand, 1/4 and 5-16 in. diam..... 6 @ 6 1/4  
 New Zealand, Hay Rope..... 6 @ 6 1/4  
 New Zealand, Tar'd rope..... 6 @ 6 1/4  
 Cotton Rope..... 12 @ 12 1/2  
 Jute Rope..... 5 @ 5 1/4

**Wire-**

List February, 1892. All kinds..... 50%

**Rules-**

Boxwood..... 80%  
 Ivory..... 80%  
 Starrett's Steel Rules and Strips..... 25%  
 Edges..... 25%

**Sad Irons-See Irons, Sad.****Sand and Emery Paper and Cloth-**

See Paper and Cloth.

**Sash Cord-See Cord, Sash.****Sash Locks-See Locks, Sash.****Sash Weights-**

See Weights, Sash.

**Sausage Stuffers or Fillers-See Stuffers or Fillers, Sausage.****Saws-**

Note.-Extra 5% to 10% often given.

Atkins' Circular..... 50%  
 Atkins' Cross Cuts, new list..... 40%  
 Atkins' Mulay, Mill and Drag..... 60%  
 Atkins' One-Man Saw..... 40%  
 Atkins' Wood Saws..... 40%  
 Diston's Circular..... 40%  
 Diston's Cross Cut, list Jan. 1, 1894..... 40%  
 Diston's Hand..... 25%  
 C. E. Jennings & Co.'s..... 25%  
 Peace Circular and Mill..... 45%  
 Peace Cross Cuts, list Jan. 1, '93..... 45%  
 Peace Hand, Panel and Rip..... 45%  
 Richardson's Circular and Mill..... 45%  
 Richardson's X Cuts, list Jan. 1, '93..... 45%  
 Richardson's Hand, &c..... 25%  
 Simonds' Circular Saws..... 45%  
 Simonds' Crescent Ground Cross Cut Saws..... 45%  
 Simonds' One Man Cross Cuts..... 40%  
 Simonds' Gang, Mill, Mulay and Drag Saws..... 45%  
 Wheeler, Madden & Clemson Mfg. Co. Cross Cuts, list Jan. 1, 1893..... 45%  
 Hand, Panel and Rip..... 45%  
 Woodrough & McFarlin..... 45%  
 Cross Cut, list Jan. 1, 1893..... 45%  
 Hand, Panel and Rip..... 25%

**Hack Saws-**

Eureka and Crescent..... 25%  
 Griffin's, complete..... 40%  
 Griffin's Hack Saw Blades..... 40%  
 Star Hack Saws and Blades..... 25%

**Scroll-**

Barnes' Builders' and Cab Makers'..... 15%  
 Barnes' Scroll Saw Blades..... 25%  
 Leater, complete, \$10.00..... 25%  
 Rogers, complete, \$4.00..... 25%

**Saw Frames-**

See Frames, Saw.

**Saw Sets-See Sets, Saw.****Saw Tools-See Tools, Saw.****Scale Beams-**

See Beams, Scale.

**Scales-**

Chatillon's Eureka..... 25%  
 Chatillon's Favorite..... 40%  
 Chatillon's Grocers' Trip Scales..... 50%  
 Family, Turnbills..... 80%  
 Hatch, Counter, No. 171, good quality..... 17%  
 Hatch, Tea, No. 161..... 17%  
 Riehle Bros' Platform..... 40%  
 Union Platform, Plain..... 25%  
 Union Platform, Striped..... 25%  
 Scissors, Fluting..... 45%

**Scrapers-**

Adjustable Box Scraper (S. R. & L. Co.)..... 40%  
 Box, 1 Handle..... 40%  
 Box, 2 Handle..... 40%  
 Deane Box and Ship..... 20%  
 Foot, Common..... 50%  
 Ship, Common..... 50%  
 Ship, R. L. Tool Co..... 10%

**Screen Window and Door Frames-See Frames.****Screw Drivers-**

See Drivers, Screw.

**Screws-****Bench and Hand-**

Bench, Iron..... 55%  
 Bench, Wood, Beech..... 55%  
 Bench, Wood, Hickory..... 55%  
 Hand, Wood..... 55%  
 Hand, Grand Rapids, list..... 35%

**Coach, Lag and Hand-Rail-**

Lag, Blunt Point, list Jan. 1, 1890..... 80%  
 Coach and Lag, Gimlet Point, list Jan. 1, 1890..... 80%  
 Hand Rail, Am. Screw Co..... 75%  
 Hand Rail, H. & B. Mfg. Co..... 70%  
 Hand Rail, Sargent's..... 70%

**Jack Screws-**

Millers Falls..... 50%  
 Millers Falls, Koller..... 50%  
 P. S. & W..... 35%  
 Sargent..... 70%  
 Stearns..... 40%

**Cork-**

Detroit Cork Screw Co..... 35%  
 Humason & Beckley Mfg. Co..... 40%  
 Williamson's..... 35%  
 Williamson's Forged Worm, Applewood Handle, No. 2, \$5.00; Rosewood, \$5.50..... 40%

**Machine-**

Flat Head Iron..... 70%  
 Round Head Iron..... 65%

**Wood-**

List January 1, 1891..... 80%  
 Flat Head Iron..... 75%  
 Flat Head Iron..... 80%  
 Round Head Brass..... 75%  
 Flat Head Bronze..... 80%  
 Round Head, Bronze..... 75%  
 Rogers' Drive Screws..... 32%

**Scroll Saws-See Saws, Scroll.****Scythes-**

Grass..... 40%  
 Grass..... 40%

**Scythe Snaths-**

See Snaths, Scythe.

**Sets-**

Alken's Sets, A. W. and Tools..... 60%  
 No. 20, \$10.00..... 60%  
 Common Brad Sets..... 75%  
 No. 12, \$10.50; No. 43, \$12.50..... 70%  
 Fray's Adj. Tool Hds., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9; 5, \$7..... 50%  
 Henry's Combination Haft..... 40%  
 Millers Falls Adj. Tool Hds., No. 1, \$12; No. 4, \$12; No. 5, \$13..... 25%  
 Stanley's Excelsior..... 35%  
 No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50..... 30%

**Nail-**

Round..... \$ gr. 33.25  
 Square..... \$ gr. 44.00  
 Buck Bros..... 27%  
 Cannon's Diamond Point..... \$ gr. 12, 20%

**Rivet-**

Regular list..... 70%

**Saw-**

Atkin's Criterion..... \$ doz No. 1, \$6.00  
 Atkin's Genuine..... \$13.00, 50% to 60%  
 Atkin's Imitation..... \$ doz \$3.00 to \$3.25  
 Atkin's Lever..... \$ doz No. 1, \$6.00  
 Atkin's Saw Set and Punch..... 50%  
 Bemis & Call Co.'s Cross Cut..... 80%  
 Bemis & Call Co.'s Plate..... 20%  
 Bemis & Call Spring Hammer..... 30%  
 Common Lever..... \$ doz \$3.00, 45% to 50%  
 Crescent..... \$ doz \$3.00, 45% to 50%  
 Croissant (Keller), No. 1, \$15.00; No. 2, \$10.00..... 40%  
 Diston's Star..... 25%  
 Hammer, Bemis & Call Co.'s new Pat..... 45%  
 Hammer, Hotchkiss..... \$5.50, 10%  
 Hart's Pat. Lever..... 20%  
 Kohler's Patent Royal..... \$ doz \$12.00  
 Kohler's Royal..... \$ doz \$12.00  
 No. 1, \$10.00; No. 0, \$8.00; No. 1, \$15.00..... 40%  
 Leopold..... 40%  
 Lloyd's Acme..... \$ doz \$15, 40% to 50%  
 Morrill's No. 1, \$15.00..... 40%  
 No. 3, Mill, \$31.00..... 40%  
 No. 10, \$15.00..... 40%  
 No. 1, \$16.00..... 40%  
 Nash's..... 20%  
 Stillman's Genuine..... \$ doz \$5.00 to \$7.75, 40% to 50%  
 Stillman's Pattern, Hand, \$ doz \$3.25; Cross Cut, \$6.50..... 55%  
 Taintor Positive..... \$ doz \$18, 50%

**Sharpeners, Knife-**

Parkin's..... \$ doz \$8.00, 50%  
 Applewood Hand, \$ doz \$8.00, 50%  
 Tanite Mills..... \$ gr. \$11.40, 25% to 33%

**Shaves, Spoke-**

Iron..... 45%  
 Bailey (Stanley R. & L. Co.)..... 50%  
 Cincinnati..... 25%  
 Goodell's..... \$ doz \$9.00, 25%  
 Stearns..... 40%

**Shears-**

Acme Cast Shears..... 10%  
 American (Cast) Iron..... 60%  
 Barnard's Lamp Trimmers..... \$ doz \$3.75  
 Barnard, Solid Steel Blade, Jap'd..... 75%  
 Barnard, Solid Steel Blade, Nickleplated..... 65%  
 Cast Steel Trimmers..... 30%  
 First quality..... 30%  
 Second quality..... 30%  
 Campbell Cutlery Co., Jap'd..... 75%  
 Nickel Plated..... 65%  
 Claus brand, Nickleplated same list..... 60%  
 Clipper..... 10%  
 Davenport Cutlery Co..... 60%  
 Diamond Cast Shears..... 10%  
 Galvanic 3/4 to 9 in., \$ doz \$1.00, 1/4 inch Hatch Cutlery Co. Solid Steel Forged..... 60%  
 Heinisch's, list Dec. 1881..... 60%  
 Heinisch's No. 10 and 10 1/2..... 60%  
 Heinisch's Tailor's Shears..... 35%  
 Howe Bros. & Hulbert, Solid Forged Steel..... 40%  
 Seymour's, list Dec. 1881..... 40%

**Victor Cast Shears-**

Victor Cast Shears..... 75%

**Timmers' Snips-**

Cast Handles, List with steel..... 40%  
 Wagon Snips and Shears..... 30%  
 Wrt. Handles, Steel Blades..... \$ (1) 30% to 10%

**Pruning Shears and Hook-**

Disston's Combined Pruning Hook and Saw..... \$ doz \$18.00, 20% to 25%  
 Disston's Pruning Hook, \$ doz \$12.00, 20% to 25%  
 Dunlap's Saw and Chisel, \$ doz \$8.50, 30%  
 Henry's Pruning Shears, \$ doz \$4.00, 25%  
 Henry's Tree Pruner..... 50%  
 E. S. Lee & Co.'s Pruning Tools..... 60%  
 Levin Pruner No. 1, \$15.00 \$ doz..... 40%  
 Levin Pruner No. 2, \$21.00 \$ doz..... 40%  
 J. Mallinson & Co., No. 1, \$5.25; No. 2, \$7.25  
 Pruning Shears, Henry's Pat., \$ doz \$2.00, 25%  
 Pruning Shears, Conn. Pat., \$2.50 to \$3.00  
 P. S. & W. Co., list Dec. 1885..... 55%  
 Wheeler, M. & C. Co., Combination, \$ doz \$12.00

**Timmers' &c.-**

Shears and Snips (P. S. & W.)..... 30%  
 Snips, J. Mallinson & Co..... 35%

**Sheaves-**

Corbin's list..... 60%

**Sliding Door-**

M. W. Co., list July, 1888..... 50%  
 Moore's Anti-Friction..... 50%  
 Patent Roller..... 60%  
 Patent Roller, Hatfield's..... 75%  
 R. E. list Dec. 18, 1885..... 55%  
 Russell's Anti-Friction, list Dec. 18, 1885..... 60%

**Sliding Shutter-**

Reading list..... 60%  
 R. E. list Dec. 18, 1885..... 60%  
 Sargent's list..... 70%

**Shells-**

Brass Shot Shells, Club, Rival, Climax..... 65%  
 Brass Shot Shells, 1st quality..... 65%  
 1st quality 4, 8, 10 and 12 gauge..... 20%  
 1st quality Rival, Club and Climax brands, 14, 16 and 20 gauge (\$7.50 list)..... 20%  
 Prime..... 40%  
 Smokeless brand, 12, 10, 16 gauge..... 40%  
 Star, Club, Rival and Climax Brands..... 35%  
 Trap brand, 12 and 10 gauge, 38% to 40%  
 Shells, Loaded..... 2% cash, 10 days.

**Ship Tools-**

L. & J. White..... 20%

**Shoes, Horse Mule, &c.-**

Burden's, Perkins', Phoenix, Standard, Diamond State, Bryden's Rose and Crescent..... \$3.50 to \$4.00  
 Bryden's Frog Pressure, at factory \$5.00

**Mule-**

Add \$1 per keg to above prices.

**Ox Wrought-**

Ton lots..... \$ m 9 1/2  
 1000 m lots..... \$ m 9 1/2  
 500 m lots..... \$ m 10 1/2

**Shot-**

Drop, up to B, 25-m bag..... \$1.10  
 Drop, up to B, 6-m bag..... \$0  
 Drop, B and larger, 25-m bag..... 1.35  
 Drop, B and larger, 5-m bag..... 35  
 Buck and Chilled, 25-m bag..... 1.35  
 Buck and Chilled, 5-m bag..... 35  
 Dust Shot, 25-m bag..... 1.75  
 Dust Shot 5-m bag..... 40

**Shovels and Spades-**

Ames' Shovels, Spades, &c., list Nov. 1, 1885 (Except Nos. named below)..... 20%  
 The following Nos. are subject to a discount of 2 1/2%: Nos. 548 to 572; 583 to 580; and Nos. 1004, 1009, 1014, 1019, 1024, 1027 and 1029.  
 Griffith's Black Iron..... 60%  
 Griffith's C. S..... 60%  
 Griffith's Solid C. S. R. Goods..... 20%  
 Hubbard & Co., Antrim list..... 25%  
 Hubbard & Co.'s, Chisholm Pattern..... 50%  
 Hussey, Blinn & Co..... 15%  
 H. M. Myers Co..... 30%  
 Lehigh Mfg. Co..... 50%  
 St. Louis Shovel Co..... 20%  
 Payne Petrebone & Son..... 35%  
 Remington's (Lowman's) Pat..... 40%  
 Rowland's Black Iron..... 60%  
 Rowland's Steel..... 60%  
 Terra Haute Shovel & Tool Co..... 25%

**Shovels and Tongs-**

Brass Head..... 60%  
 Iron Head..... 60%

**Sieves and Sifters-**

A. & W. Sifters..... \$ gr \$15.00  
 Buffalo Metallic, S. S. & Co..... 50%  
 Electric Light..... \$ doz \$1.50; \$ gr \$15.00  
 Hunter's Genuine..... \$ doz \$1.75; \$ gr \$15.00  
 Hunter's Imitation..... 25%

**Mann's Tin Rim-**

Shaker (Barber's Pat.) Flour Sifters..... \$ gr \$21.00

**Sieves, Wooden Rim-**

Mesh 18, Nested, \$ doz..... \$0.30  
 Mesh 20, Nested, \$ doz..... .25  
 Mesh 24, Nested, \$ doz..... .15

**Sinks Cast Iron-**

Standard list..... 65%



## Twine—

Flex Twine		BO. B.
No. 9, 1 and 2	3 Balls.....	22 20
No. 12, 1 and 2	3 Balls.....	18 24
No. 18, 1 and 2	3 Balls.....	17 20
No. 24, 1 and 2	3 Balls.....	17 20
No. 36, 1 and 2	3 Balls.....	16 19
Chalk Line, Cotton, 1 1/2 Balls.....		17 17
Cotton Mocs, 6, 9, 12, 15 & 20 dozs., 15c @ 10		
Cotton Wrapping, 5 Balls to a	doz., 13c @ 14	
2-Ply Hemp, 1 and 1 1/2	3 Balls (Spring Twine).....	10c @ 10 1/2
3-Ply Hemp, 1 1/2	3 Balls.....	10c @ 10 1/2
3-Ply Hemp, 1 1/2	3 Balls.....	10c @ 10 1/2
2, 3, 4 and 5 Ply Jute, 1 1/2	3 Balls.....	8 1/2

Mason Line, L  
No. 264 Matter

NO. 202 MATERIALS, 1/2" DIA. x 1/2" THICK, 100% COTTON  
Paper.....10¢@11¢  
Wool.....5¢@6¢

**W 1868—**  
**Solid Box . . .**

**Parallel—**

Backus and Union.....	40%
Bonney's.....	50%
Double Screw Leg.....	15&10%
Fisher & Norris Double Screw.....	15&10%

Hollands'.....  
Howard's.....

Massey Quick Action.....	20@25
Merrill's.....	15@20
Millers' Falls.....	40@40&10

Moore's.....  
Parker's.....

Prentiss.....	20@25%
Sargent's.....	70@10%
Simpson's Adjustable.....	40%
Stephens'.....	25@80%
Trenton.....	40&5@40&10%

Wilson's.....S:

Bonney's, Nos. 2 & 3,	\$15.00	40	10	50	10
Economy, # doz, Nos. 110,	\$10.00	120			
	\$15.00	50	10	10	50
Hopkins'	# doz	\$17.50	10	50	10
Reading		40	10	50	10
Stearns' Common, Nos. 0, 1, 2 & 3		50	10	50	10
Stearns' Rubber Jaw, Nos. 1C & 83		83	83	83	83
Wentworth		20	10	50	10

**Bauer's Pipe**

Cincinnati	25@104
Good Hand Vises	20
Enterprise Pipe Vises	each \$3.00, 40
Massey Combination Pipe Vise	40
Phoenix Hand Vises	each \$3.40, 38
Phoenix Hand Vises	doz \$6.60, 33

**Wads—Price Per M.**

U.M.C.&W.R.A.—B.E. 11 up	68¢
U.M.C.&W.R.A.—B.E. 9&10	82¢
U.M.C.&W.R.A.—B.E. 8	90¢
U.M.C.&W.R.A.—B.E. 7	\$1.10
U.M.C.&W.R.A.—P.E. 11 up	1.15
U.M.C.&W.R.A.—P.E. 9&10	1.50
U.M.C.&W.R.A.—P.E. 8	1.70
U.M.C.&W.R.A.—P.E. 7	1.80
Eley's B. E. 11 and larger	\$1.70@1.75
Eley's P. E. 12 to 20	\$3.00@3.25

**Wagon Boxes—**  
See Boxes, Wagon.

**Wagon Jacks—**

**Ware, H.**

<b>Cast Iron, Hollow-</b>	
Stove Hollow Ware—	
Ground .....	60&10&60&10&10
Unground .....	65&10&70&5
<b>Gray Enameled Ware—</b>	
Stove .....	50&50&5
Massin Kettles .....	60&10&60&10&10
Boilers and Saucepans .....	40&50&40&10&5
<b>White Enameled Ware—</b>	
Massin Kettles .....	70&10&75&5
Boilers and Saucepans .....	60&60&10&5
Rustless Hollow Ware .....	50&50&10

## Tinned Bollen

Agate and Granite Ware, list Jan. 1,  
1894 ..... 25  
Ironclad Enameled Ware, Old list....  
50 & 107

**Galvanized T**  
**Inch**

Each.....	6	7	8	9
Each.....	55¢	60¢	65¢	75¢

**Steel Hollow Ware.**  
 Avery Spiders and Griddles ..... 80¢ & 70¢  
 Avery Kettles..... 60¢ & 10¢ & 70¢ & 10¢

**Standard Fiber.**  
 Per Doz.  
 Plain. Decorated

Chapdorn.....	\$7.50
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Half-peck Measure

Keelers, 11 $\frac{1}{2}$ in.....	3.00
Spittoons, "Daisy," 8 in.	3.50
Wash-Basins, 10 $\frac{1}{2}$ in.....	1.80
	2.00

Wash-Basins,  
See also Pa

<b>Indurated Fiber.</b>	
Basins, Ringed, * doz. No. 2.....	2.80
Butter Bowls 15, 17 and 19-inch (3 pieces), * nest.....	\$1.50
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), * nest.....	\$2.55
Liquid Measures, pt., qt., 3 qt. and funnell (4 pieces), * set.....	\$1.20
Spittoons No. 2, * doz.....	\$6.00
Washtubs, Nested, Nos. 0, 1, 2, and 3 (4 pieces), * nest.....	\$5.75
See also Pails.	

**Silver**  
4 mo. 1

Meriden Britannia Co.....	} 40c 5c
Reed & Barton.....	
Rogers & Brother.....	
Simpson, Hall, Miller & Co.....	
Hartford Silver Plate Co.....	
William Rogers Mfg. Co.....	40c 5c 5c
<b>Washers—</b>	
Size hole.....	5-16 3/8 1/2 5/8 1 1/2

**Washers....**  
In lots less th

boxes 1¢ to list.  
**Washer Cutters—**  
 See Cutters, Washers.  
**Water Coolers—**  
 See Coolers, Water.  
**Wedges—**  
 Iron..... \$ D. 24¢ @ 25¢  
 Steel..... \$ D. 5¢ @ 5 1/2¢  
**Weights Sash—**  
 Ton lots at foundry, \$ ton, \$15.00 @ 16.00  
**Well Buckets—** Galvanized

**Well-  
lized—**

**Wheels Well-**  
8 in., \$2.00; 10 in., \$2.50; 12 in.,

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## Whips

American Whip Co.: Length.	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8 ft.
X. L. Whalebone Driving.....	\$18.00	\$20.00	\$22.00	\$24.00	\$27.00	\$30.00	\$33.00	\$36.00
Eureka, Two-thirds Whalebone.....	15.00	16.50	18.00	20.00	22.00	24.00	26.00	28.00
Bull Bone, Half-length Whalebone.....	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00
American Standard.....	8.00	8.50	9.00	9.50	10.00	10.50	11.00	11.50
True Grip, Raw Hide Center.....	6.00	6.00	6.50	7.00	7.50	8.00	8.50	9.00
New Name, Stooked Java, Black and Wine Colors.....	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
American, 99 Pen Whip.....	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Gents' Light Driving No. 111.....	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Gents' Light Driving No. 104.....	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Hand-made Stooked Java No. 108.....	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50
A large variety of cheaper grades.....	50¢	50¢	50¢	50¢	50¢	50¢	50¢	50¢
Team Whips.....	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00
Toy Whips.....	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50
Hardware Assortment, 10/American, 75 Whips for \$50.00.								

## Wire and Wire Goods—

## Iron—

Market,	Br. & Ann., Nos. 0 to 18.	Extra 5¢ 10¢
	75¢ 10¢ 75¢ 10¢ 25¢	often given and low net prices often made on large lots.
	Cop'd, Nos. 0 to 18.75¢ 25¢	
	Galv., Nos. 0 to 18.70¢ 25¢ 70¢ 25¢	
	Tin'd, Nos. 0 to 18.70¢ 25¢ 70¢ 25¢	

Stone,	Br. and Ann'd,	Extra 10%
	Nos. 16 to 18.80¢	often given.
	Nos. 19 to 26.80¢ 25¢	
	Ann'd Wire on Spools.....	60¢
	Brass, list Jan. 18, 1894.....	40¢ 25¢
	Cast Steel Wire.....	50¢
	Copper, list Jan. 18, 1894.....	40¢ 25¢
	Galvanized Fence.....	75¢ 10¢
	Malin's Ann'd & Tin'd on Spools.....	60¢ 25¢
	Malin's Brass and Cop. on Spools.....	50¢ 25¢

Steel Music Wire, 12 to 30, imported..... 60¢ 70¢  
 Stub's Steel Wire..... \$6.00 to \$8.00  
 Tins' Spooled, Tins' & Ann'd..... 60¢ 25¢  
 Tins' Spooled Cop. and Brass..... 50¢  
 Tins' Broom Wire, 18 to 21, \$ 1.45 to \$ 1.60  
 Wire Clothes Line, see Lines.  
 Wire Picture Cord, see Cord.

## Bright Wire Goods—

Standard list..... 90¢ 20¢ 15¢  
 Wire Cloth and Netting—  
 Galvanized Wire Netting..... 80¢ 50¢ 10¢ 25¢  
 Painted Screen Cloth \$ 100 ft \$ 1.45 to \$ 1.50

## Wire Barb—

See Trade Report.

## Wire Rope—See Rope, Wire.

## Wrenches—

American Adjustable.....	40¢
Baxter's Adjustable "S".....	40¢ 10¢ 50¢
Coe's Diagonal.....	50¢ 50¢ 10¢
Coe's "Mechanics".....	50¢ 10¢ 25¢
Girard Standard.....	55¢ 10¢ 70¢
Lamson & Sessions' Engineers.....	60¢ 10¢
Lamson & Sessions' Standard.....	70¢ 10¢
Girard Agricultural.....	75¢ 10¢ 25¢
Lamson & Sessions' Agri'l.....	80¢ 25¢
R. S. & W. Agricultural.....	80¢ 25¢
W. & B. Diamond.....	50¢ 25¢
Acme, Bright.....	40¢ 25¢
Acme, Nickled.....	40¢ 25¢

Alken's Pocket (Bright).....	\$6.00, 50¢ 10¢
Alligator.....	50¢
Always Ready.....	25¢ 50¢
Benn's & Call's.....	35¢ 50¢
Adjustable S.....	35¢ 50¢
Brigg's Pattern.....	30¢ 10¢
Combination Black.....	40¢ 10¢
Combination Bright.....	40¢ 10¢
Cylinder or Gas Pipe.....	45¢ 50¢
Extra Heavy.....	45¢
Merrill's Pattern.....	45¢
No. 3 Pipe Bright.....	55¢
Bit Wrench, Adj., Tatum's.....	\$ 2.25, 25¢ 10¢
Boardman's.....	30¢
Cincinnati Brace Wrenches.....	55¢ 25¢
Diamond Steel.....	20¢ 10¢
Donchue's Engineer.....	50¢ 10¢
Eagle.....	70¢ 70¢ 10¢
Hercules.....	55¢ 10¢ 25¢
Taft's Vice Wrench.....	55¢ 10¢ 25¢
The Favorite Pocket.....	\$ 4.00, 40¢
Walker's.....	55¢ 25¢
Webster's Pat. Combination.....	25¢

## Wringers, Clothes

Am. Wringer Co.'s list July 1, 1893.....	2¢ cash
Colby Wringer Co.'s list May 1, 1893.....	2¢ cash
Lovell Mfg. Co.'s list July 1, 1893.....	2¢ cash
Peerless Mfg. Co.'s list Feb. 1, 1892.....	2¢ cash
National Wringer & Mfg. Co.'s list June 1, 1892.....	2¢ cash

## Wrought Goods—

Staples, Hooks, &c., list March 17, 1892.....	85¢ 10¢ 85¢ 15¢
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## Paints, Oils and Colors.—Wholesale Prices.

## Animal and Vegetable Oils—

Linseed, City, raw, per gal.....	55¢
Linseed, City, refined.....	52¢
Linseed, Western, raw.....	50¢
Lard, City, Extra Winter.....	60¢
Lard, City, Prime.....	59¢
Lard, City, Extra No. 1.....	59¢
Lard, City, No. 1.....	45¢
Lard, Western, prime.....	59¢
Cotton-seed, Crude, prime.....	27¢
Cotton-seed, Crude, off grades.....	25¢
Cotton-seed, Summer Yellow, prime.....	32¢
Cotton-seed, Summer Yellow, off grades.....	30¢
Sperm, Crude.....	63¢
Sperm, Natural Spring.....	68¢
Sperm, Bleached Spring.....	68¢
Sperm, Natural Winter.....	68¢
Sperm, Bleached Winter.....	73¢
Whale, Crude.....	44¢
Whale, Natural Winter.....	47¢
Whale, Bleached Winter.....	49¢
Whale, Extra Bleached.....	49¢
Sea Elephant, Bleached Winter.....	26¢
Menhaden, Crude, Sound.....	25¢
Menhaden, Crude, Southern.....	34¢
Menhaden, Light Pressed.....	34¢
Menhaden, Bleached Winter.....	40¢
Menhaden, Extra Bleached.....	40¢
Tallow, City, prime.....	45¢
Tallow, Western, prime.....	43¢
Cocoonut, Ceylon.....	54¢
Cocoonut, Cochinchina.....	64¢
Cod, Domestic.....	40¢
Cod, Foreign.....	35¢
Red Saponified.....	44¢
Bank.....	35¢
Straits.....	36¢
Olive, Italian, bbls.....	58¢
Neatfoot, prime.....	60¢
Palm, prime, Lagos.....	54¢

## Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.....	7¢
Black, 29 gravity, 15 cold test.....	7¢
Black, 29 gravity, summer.....	54¢

Cylinder light, filtered.....	12¢
Cylinder, dark, filtered.....	10¢
Paraffine, 23 1/2 @ 24 gravity.....	11¢
Paraffine, 25 gravity.....	10¢
Paraffine, 28 gravity.....	74¢
Paraffine, red.....	94¢

## Paints and Colors—

Barytes, Foreign, 10 ton.....	\$22.00
Barytes, Amer. floated.....	\$29.00
Barytes, Amer. No. 1.....	\$18.00
Barytes, Amer. No. 2.....	\$13.00
Barytes, Amer. No. 3.....	\$11.00
Blue, Celestial.....	40¢
Blue, Chinese.....	40¢
Blue, Prussian.....	25¢
Blue, Ultramarine.....	8¢
Brown, Spanish.....	4¢
Brown, Vandyke, Amer.....	3¢
Brown, Vandyke, English.....	8¢
Carmine, No. 40, in bulk.....	2.00
Carmine, No. 40, in boxes or barrels.....	2.10
Carmine, No. 40, in ounce bottles.....	3.00
Chalk, in bulk.....	1.75
Chalk, in bbls.....	33¢
China Clay, English.....	13.00
Cobalt Oxide, prep'd.....	9.00
Cobalt Oxide, black.....	1.00
Cobalt Oxide, black, less 100 lb.....	1.90
Green, Paris, in bulk.....	25¢
Green, Paris, 170 @ 175 lb.....	25¢
Rebates.....	25¢
Rebates, 3¢ @ 10 on lots of 10,000 lb or over; 2 1/2¢ @ 4000 to 10,000 lb; 2¢ @ 2000 to 4000 lb; 1 1/2¢ @ 1000 to 2000 lb; 1¢ @ 500 to 1000 lb purchased during the season.....	25¢
Green, Chrome, ordinary.....	6¢
Green, Chrome, pure.....	22¢
Lead, Eng., B.B. white.....	7¢
Lead, Amn. White.....	4 1/2¢
Dry.....	5 1/2¢
Lead, White, in oil, 25 lb tin.....	7 1/2¢
Lead, White, add to keg price.....	7 1/2¢
Lead, White, in oil, 12 1/2 lb tin.....	7 1/2¢
Lead, White, add to keg price.....	7 1/2¢
Lead, White, in oil, 1 to 5 lb as sorted tins, add to keg price.....	7 1/2¢

Lead, Red, bbls. and 1/2 bbls.....	54¢
Lead, Red, kegs.....	54¢
Litharge, kegs.....	54¢
Litharge, bbls. and 1/2 bbls.....	54¢
Ocher, Rochelle.....	1.35
Ocher, French Washed.....	1.10
Ocher, German Washed.....	1.10
Ocher, American.....	1.10
Orange Mineral, English.....	7 1/2¢
Orange Mineral, French.....	10¢
Orange Mineral, German.....	7 1/2¢
Orange Mineral, American.....	7 1/2¢
Red, Indian, English.....	5¢
Red, Indian, American.....	5¢
Red, Turkey.....	9¢
Red, Tuscan.....	7¢
Red, Venetian, American.....	70¢
Red, Venetian, English.....	1.10
Sienna, Italian, Burnt and Powder.....	4¢
Sienna, Ital., Burnt Lumps.....	1 1/2¢
Sienna, Ital., Raw, Powd.....	4 1/2¢
Sienna, Ital., Raw, Lumps.....	1 1/2¢
Sienna, American, Raw.....	1 1/2¢
Sienna, American, Burnt and Powder.....	1 1/2¢
Talc, French.....	1 1/2¢
Talc, American.....	1¢
Terra Alba, Frch. 100 lb.....	65¢
Terra Alba, English.....	65¢
Terra Alba, American No. 1.....	65¢
Terra Alba, American No. 2.....	65¢
Umber, Turkey, Burnt and Powdered.....	2 1/2¢
Umber, Turkey, Raw and Powdered.....	2 1/2¢
Umber, Turkey, R.W. Lumps.....	2 1/2¢
Umber, Turkey, Bnt. Amer.....	1 1/2¢
Umber, Turkey, R.W. Amer.....	1 1/2¢
Yellow, Chrome.....	10¢
Vermilion, American Lead.....	11¢
Vermilion, Quicks'er, bulk.....	43¢
Vermilion, Quicks'er, bags.....	44¢
Vermilion, Quicksilver sm'r.....	52¢
Vermilion, English Import.....	55¢
Vermilion, Imitation, Eng.....	8¢
Vermilion, Trieste.....	90¢
Vermilion, Chinese.....	85¢
Whiting Common, 100 lb.....	40¢
Whiting Gliders.....	60¢
Zinc, American, dry.....	3 1/2¢
Zinc, French, Red Seal.....	7¢

Zinc, French, Green Seal.....	84¢
Zinc, French, V. M. X.....	84¢
Zinc, Antwerp, Red Seal.....	84¢
Zinc, Antwerp, Green Seal.....	84¢
Zinc, German, L. Z. O.....	84¢
Zinc, V. M. in Poppy Oil, Seal, lots of 1 ton and over.....	104¢
Zinc, V. M. in Poppy Oil, Red Seal.....	104¢
lots of 1 ton and over.....	104¢
lots of less than 1 ton.....	104¢
Discounts—French Zinc.....	Discounts to buyers of 10 bbl. lots of one or assorted grades, 1¢; 25 bbls, 2¢; 50 bbls, 4¢. No discount allowed on less than bbl. lots.

## Colors in Oil—

Black, Drop, Frankfurt.....	25¢
Black, Drop, English.....	12¢
Black, Drop, Domestic.....	7¢
Black, Lampblack, Best.....	20¢
Black, Lampblack, Common.....	7¢
Black, Ivory.....	8¢
Blue, Chinese.....	35¢
Blue, Prussian.....	20¢
Blue, Ultramarine.....	12¢
Brown, Vandyke.....	7¢
Green, Chrome.....	8¢
Green, Paris.....	16¢
Sienna, Raw.....	7¢
Sienna, Burnt.....	7¢
Umber, Raw.....	7¢
Umber, Burnt.....	7¢

## Putty—

In barrels and 1/2 bbls.....	.013¢
In tubs.....	.013¢
In tin cans.....	.013¢
In bladders.....	.013¢

## Spirits Turpentine

In regular bbls.....	29 1/2¢
In machine bbls.....	30¢

## Glue—

Low Grade.....	7¢
Cabinet.....	11¢
Medium White.....	12¢
Extra White.....	18¢
French.....	10¢
English.....	10¢
Irish.....	10¢

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New York (Main Office),.....	96-102 Reade Street,	DAVID WILLIAMS, Publisher,	
Philadelphia,.....	220 South Fourth Street,	THOMAS HOBSON, Manager.	
Pittsburgh,.....	Room 509, Hamilton Building.	ROBERT A. WALKER, Manager.	
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BRITISH AGENCY: Office of The Ironmonger, 42 Cannon St., London.

AUSTRALIAN OFFICES: Melbourne, 231 Elizabeth St.; Sydney, 420 George St.

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